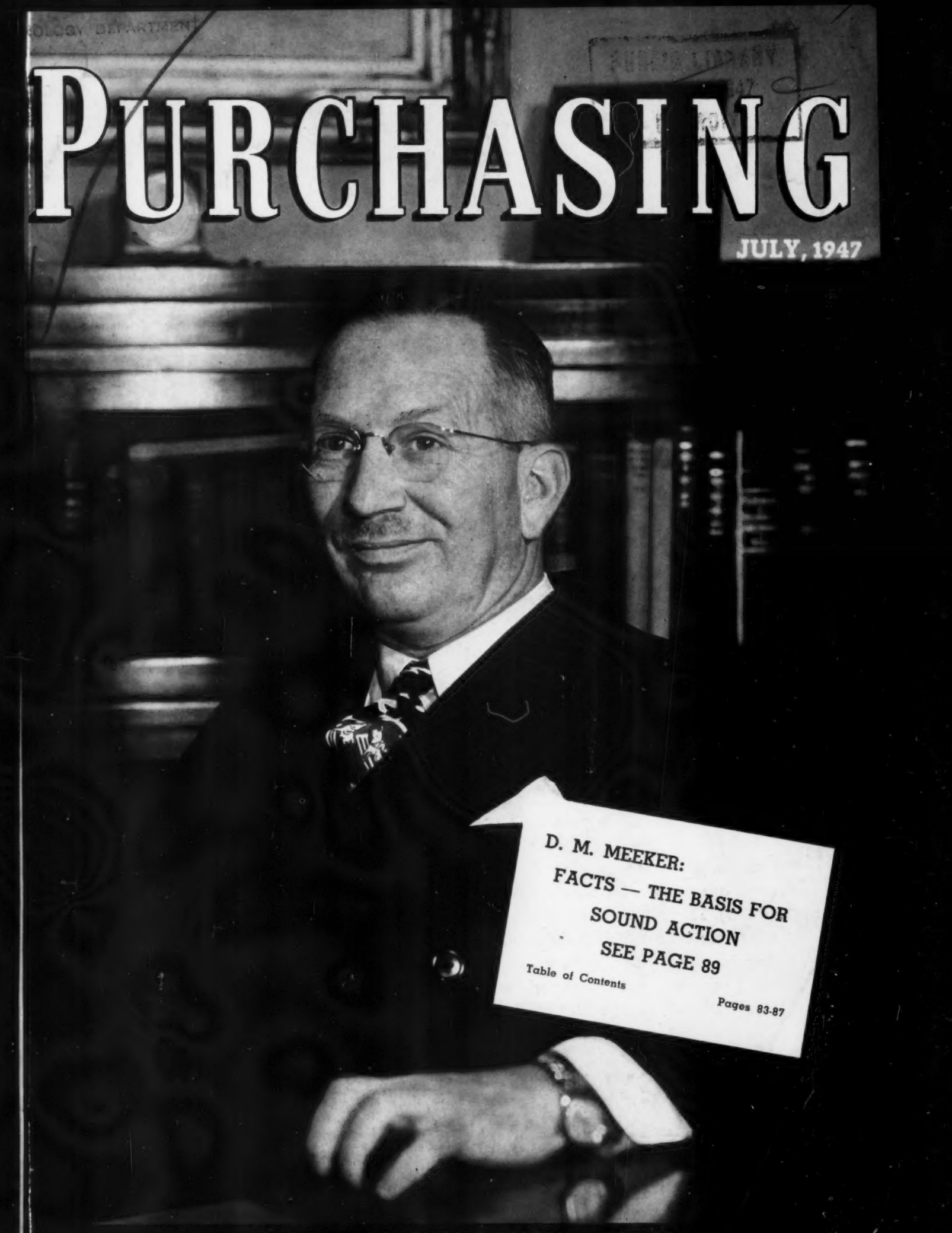
PURCHASING

JULY, 1947



D. M. MEEKER:
FACTS — THE BASIS FOR
SOUND ACTION
SEE PAGE 89

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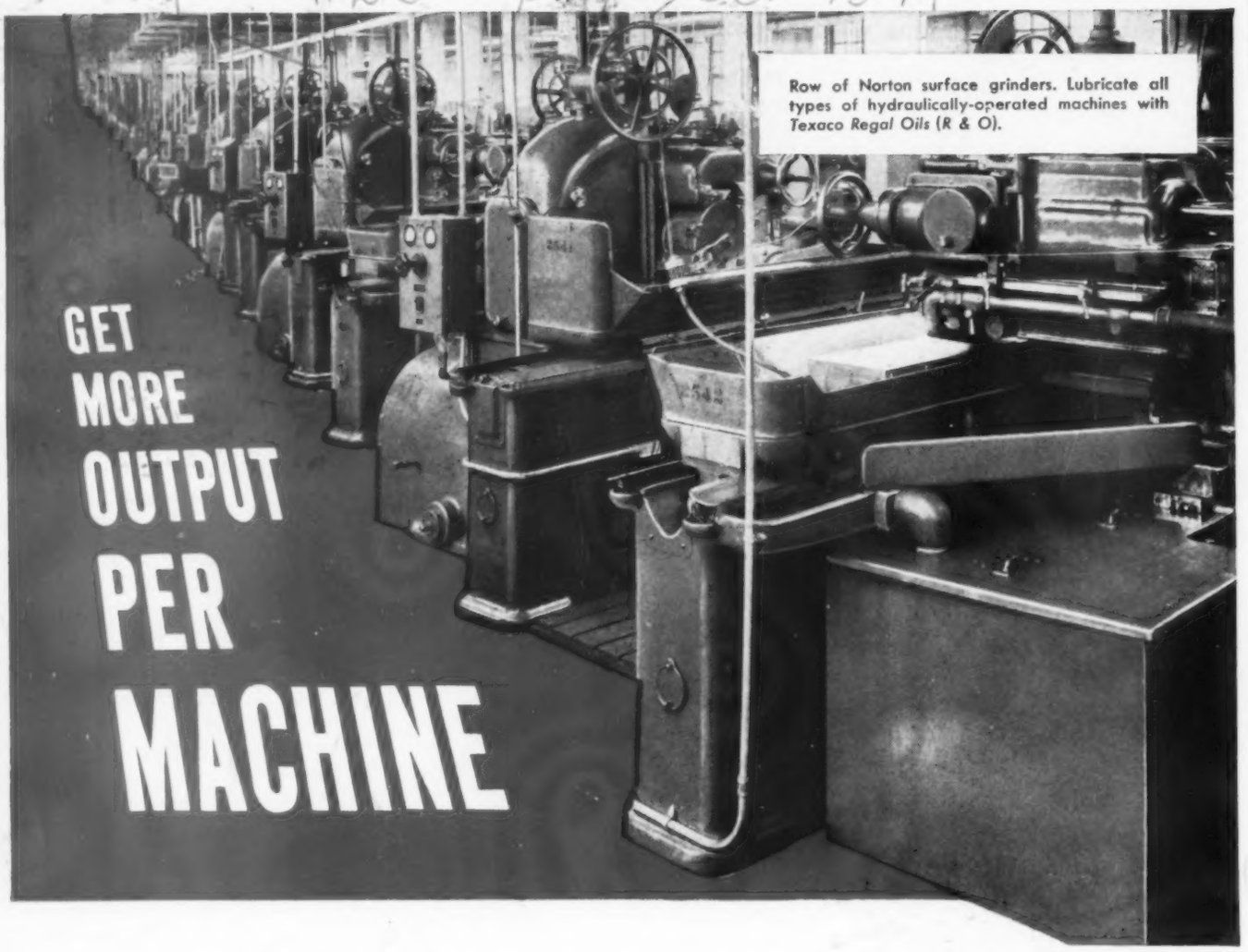
A CONOVER-MAST PUBLICATION • 35 CENTS

R V. 23 July-Dec. 1947



Row of Norton surface grinders. Lubricate all types of hydraulically-operated machines with *Texaco Regal Oils* (R & O).

with effective lubrication

To keep machines producing at full capacity . . . means using the *right* lubricant *right* . . . on every job . . . *Texaco.*

In hydraulically-operated machines, for example, you'll get smoother and more efficient operation with *Texaco Regal Oils* (*R & O*). The ability of these world-famous oils to prevent rust, sludge and foam make them ideal for hydraulic systems. They assure much longer production periods without shutdown to change oil.

Texaco Regal Oils (*R & O*) are also widely used for turbine lubrication—your best assurance of dependable power production.

Texaco has other lubricants to help you get greater production at lower cost . . . and Texaco Lubrication Engineering Service will gladly assist in their proper selection and use. Just call the nearest of the more than 2500 Texaco distributing plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, New York.

TEXACO

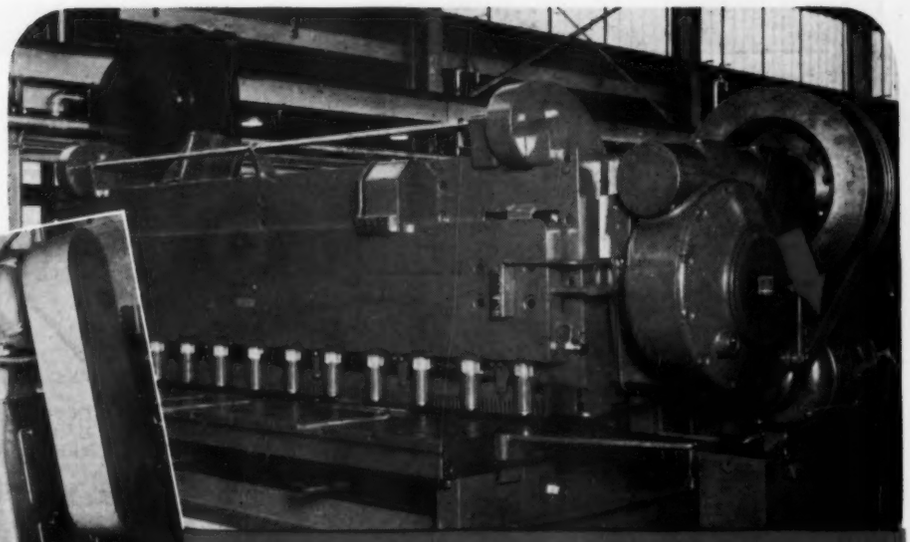
TEXACO Lubricants, Fuels and Lubrication Engineering Service

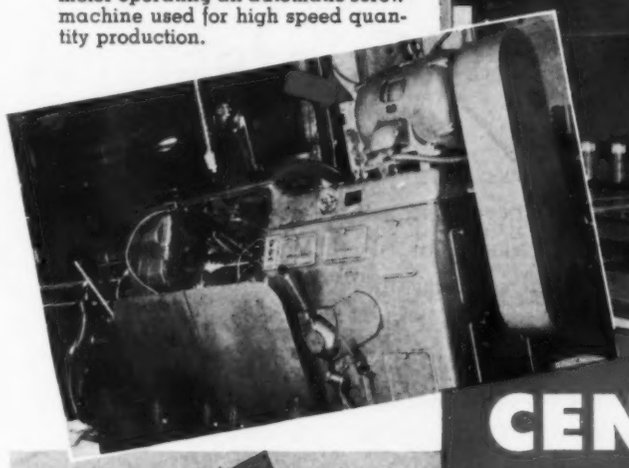
Tune in . . . TEXACO STAR THEATRE presents the NEW TONY MARTIN SHOW every Sunday night. See newspaper for time and station.

Tech.

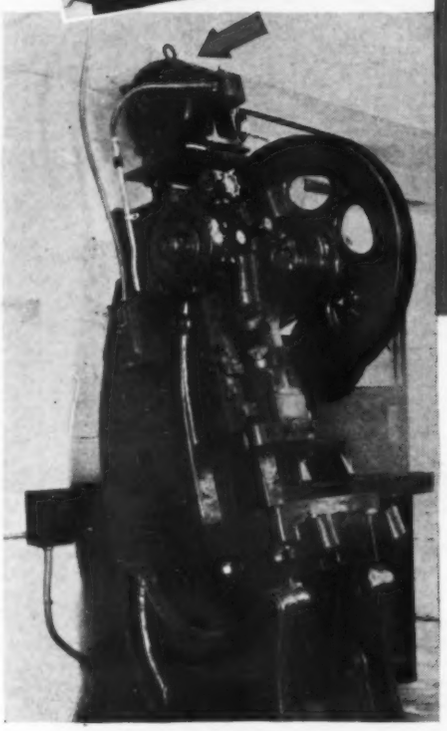
At right — Century 30 Horse Power high torque, high slip motor operating a heavy duty shear. High slip motor reduces the shock loads when shearing heavy plate.

Below — Century 20 Horse Power motor operating an automatic screw machine used for high speed quantity production.





CENTURY MOTORS Assist in maintaining close tolerance in production . . .



Century 2 Horse Power, open-rated general purpose motor operating a punch press making small parts.

Thousands of Century motors on machine tools in modern feeder departments are helping to maintain production schedules and keep assembly lines running. The unusual freedom from vibration of these motors assists in maintaining close tolerance in production.

Century machine tool motors are built to stand up under the toughest operating conditions. Their rugged frames, accurately machined feet, large shafts, accurate alignments, good mechanical and electrical balance — all contribute to their outstanding performance.

Century builds a complete line of electric motors and generators, fractional and integral horse power, in the popular sizes to meet the requirements of industrial production, processing, and appliance needs.

Specify Century motors on all electrically powered equipment.

Century C MOTORS

CENTURY ELECTRIC CO.

1806 Pine St. St. Louis 3, Mo.

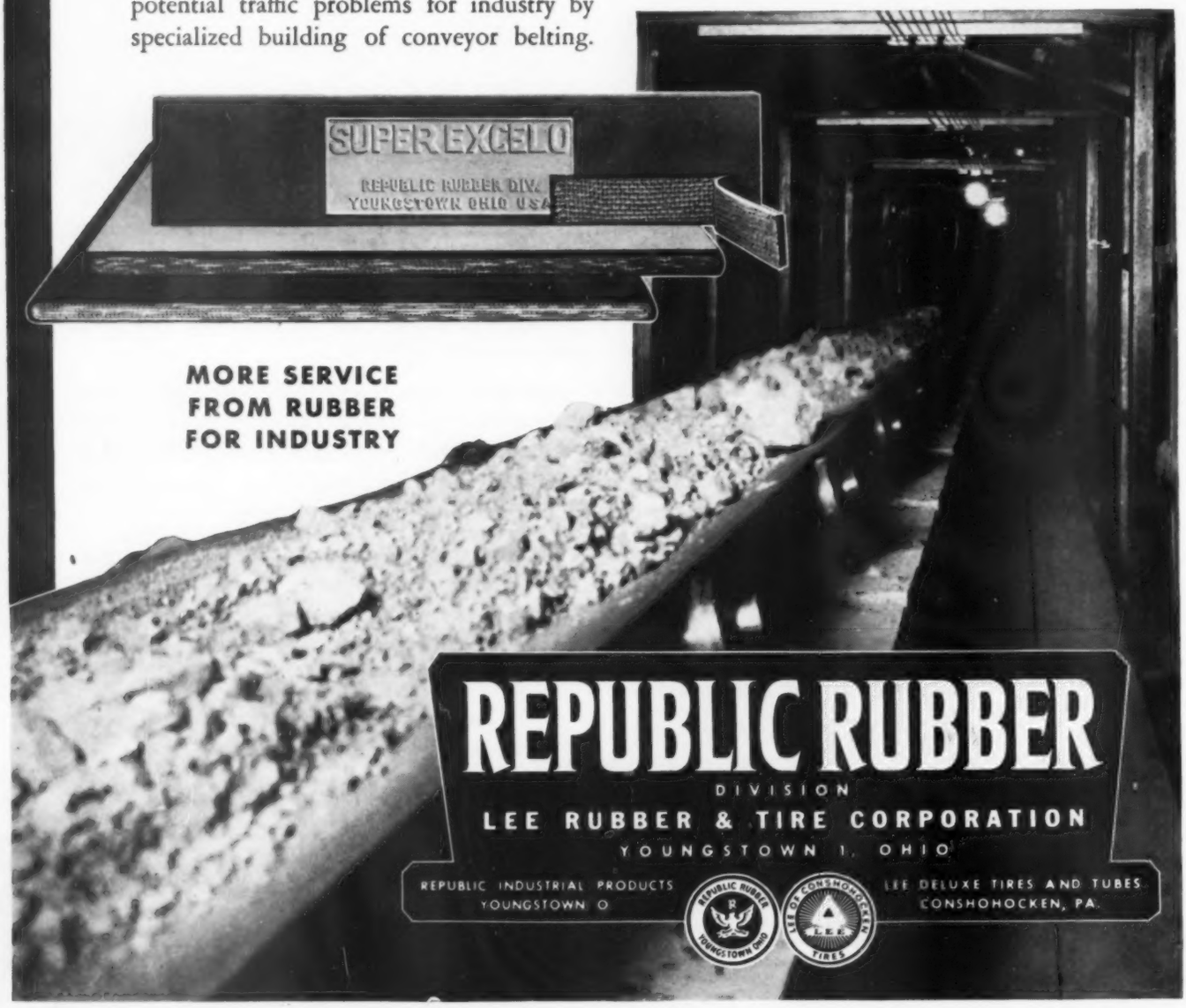
Offices and Stock Points in Principal Cities

330

PURCHASING, published monthly by Conover-Mast Magazines, Inc., Publication Office, Orange, Conn. Editorial and Executive Offices 205 East 42nd St., New York 17, N. Y. Entered as second-class matter August 8, 1942, at the Post Office in Orange, Conn., under the act of March 3, 1879. Subscription, $3 for one year, $5 for two years in the U. S. A. Canada and Foreign $4.00. Volume 23, No. 1.

RUBBER HIGHWAYS
that solve industry's traffic problems

WHEN traffic gets snarled on industry's belt conveyor systems, it means idle men at the delivery end, production stoppage and other costly conditions. The trouble is that ordinary belts can meet with premature failure from a variety of causes. Impact at loading points, constant flexing, abrasive shifting of loads, deteriorating action of oil on rubber or mildew on fabric are some of the common threats to maximum service life of belting. Republic solves these potential traffic problems for industry by specialized building of conveyor belting. Each belt, during construction, is provided with specific properties of resistance to the particular forms of service abuse of the intended installation. When your needs call for highest belt resilience against severe impact, maximum abrasion resistance of covers, oil resistance of rubber compounds, protection of fabric against mildew, or other belt qualities, consult your nearby Republic Distributor.



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Your product can make many valuable friends when packaged in set-up boxes. These versatile containers are the ideal way of introducing your product to the best customers in the country. A recent national survey showed that 80% of the nation's manufacturers planned increased use of boxes because of their greater point-of-sale appeal. Larger display area and attractive appearance make these economical packages the most efficient media to introduce your product to your customers.

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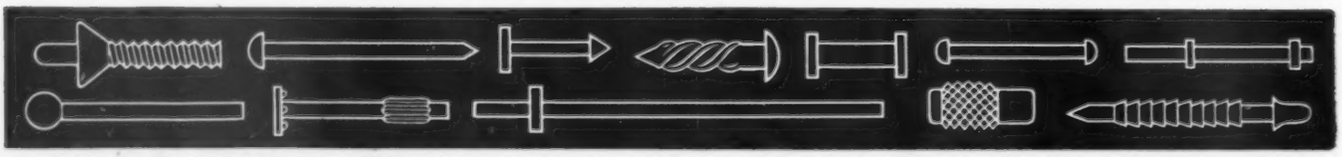
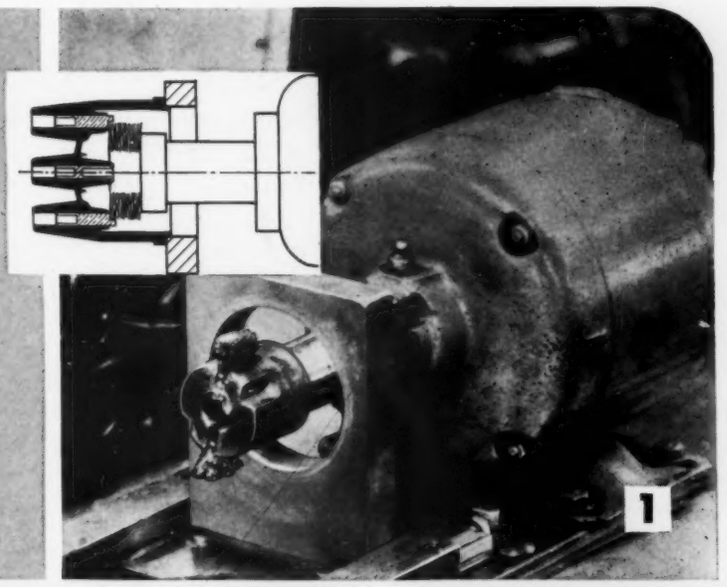
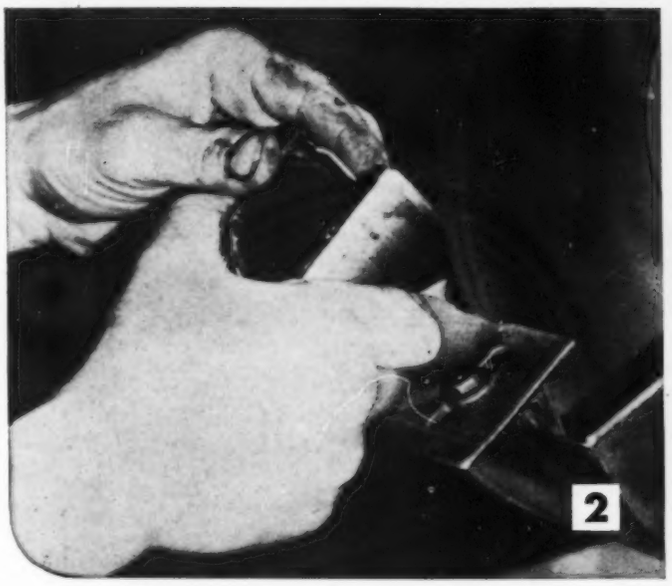
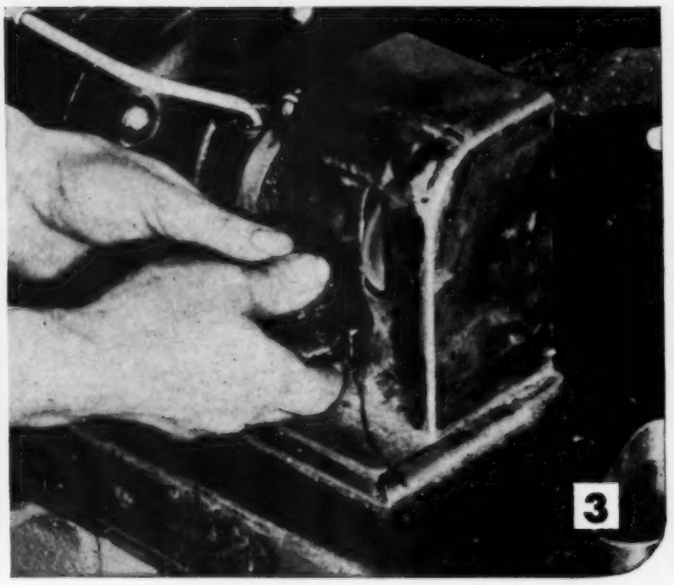


MANUFACTURERS OF COLD-HEADED SPECIALTIES—ESTABLISHED 1850

Brush away those *Small Job Headaches!*







EVERY plant has them—tedious, time-consuming jobs involving the cleaning and finishing of small parts and assemblies. Little jobs individually, but collectively costly operations that have an important bearing on the price tag of the finished product.

Scores of companies have adopted brushing as a solution to these small job headaches. A typical example is the West Pullman Works of the International Harvester Company, Chicago, which is devoted to small parts production for their wide line of farm equipment. Illustration No. 1 shows a special holder fitted with Osborn Situft brushes which removes burrs from terminal inserts inside tractor motor distributor caps. These inserts are almost impossible to reach by hand yet the job takes only seconds by brushing.

Removing varnish from magneto rotors and smoothing sharp edges with an Osborn brushing wheel is pictured in Illustration No. 2. And the little 2-inch Osborn brush shown in Illustration No. 3 cleans the secondary leadout of magneto coils.

Yes, they are little jobs but the savings made possible by brushing bulk up big on the cost sheet. Why not find out now where brushing can brighten your production picture? An Osborn sales engineer will gladly assist you in this analysis. Just say the word—soon.

Osborn Brushes

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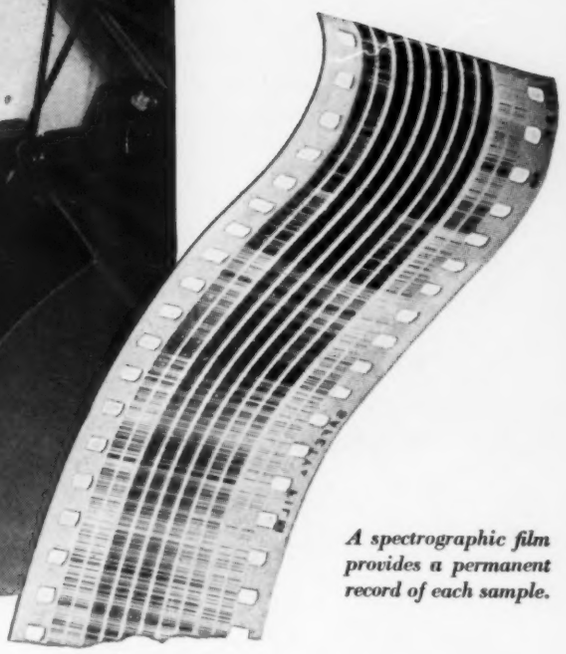
MOLDED PLASTICS PIONEERS
Department PR • Elyria, Ohio

Examination of the spectrum emanating from the vaporization of the steel sample in an electric arc quickly reveals the chemical content of the sample.



A spectrographic film provides a permanent record of each sample.

Spectrographic Analysis ... another Inland Routine

To check the chemical composition of the heat in the open hearth furnace as it nears the end period, samples taken from the furnace are carried by pneumatic tube to the Inland laboratories for a quick but accurate spectrographic analysis. If the metallic composition of the heat is not exactly right, this check will determine the changes necessary to bring the steel to specifications. This is only one of the many tests made with this new and useful analytic tool—tests that make possible Inland steels of uniform quality to meet your service requirements.

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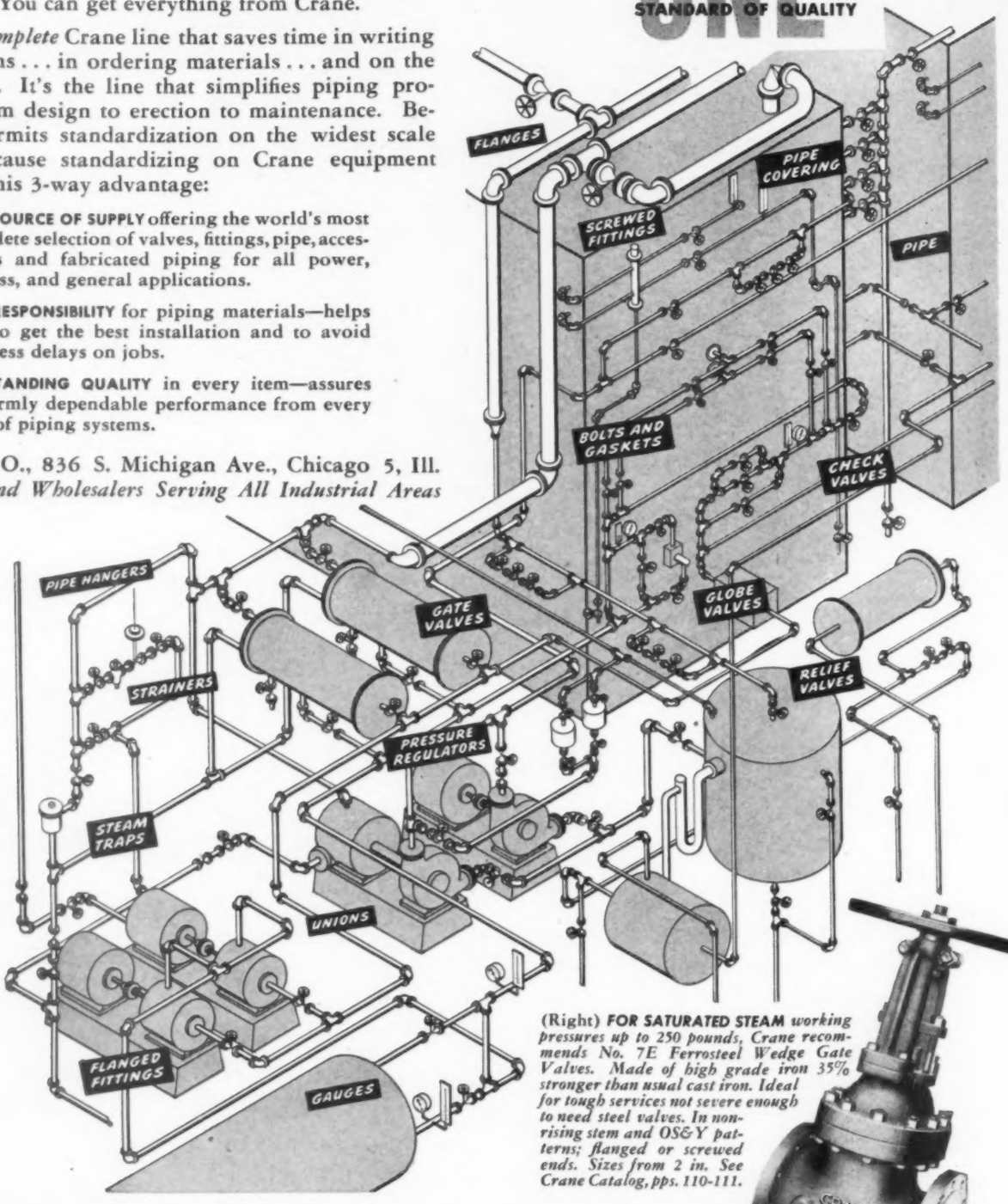

Fuel, water and condensate piping to oil-burning boilers.

(Right) **FOR SATURATED STEAM** *working pressures up to 250 pounds, Crane recommends No. 7E Ferrosteel Wedge Gate Valves. Made of high grade iron 35% stronger than usual cast iron. Ideal for tough services not severe enough to need steel valves. In nonrising stem and OS&Y patterns; flanged or screwed ends. Sizes from 2 in. See Crane Catalog, pps. 110-111.*

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VALVES • FITTINGS
PIPE • PLUMBING
AND HEATING

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FOR EVERY PIPING SYSTEM

What other fluorescent ballasts meet these tests? Typical of the care that goes into the making of General Electric fluorescent lamp ballasts is the testing program which all materials—every part, must pass.

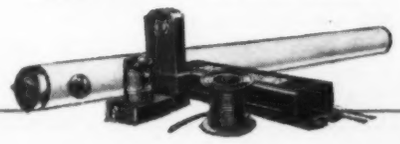
G-E Pyranol capacitors, which provide power-factor correction for the ballast, are a good example. Every material used in these capacitors—from the kraft paper to the non-flammable Pyranol liquid dielectric—is carefully tested. Winding is performed in an air conditioned room, under controlled humidity. Evacuation is precision controlled. Then, *every single capacitor* is subjected to tests for electrical characteristics, electrical faults, and possible leaks.

The care taken in selecting fine components for every G-E ballast is supplemented by six different checks for correct operating characteristics, in addition to continual quality tests on complete ballasts. Finally, each ballast is subject to selection for independent testing by Electrical Testing Laboratories, Inc.

the ballast you can

Install and forget

BALLASTS LAMPS STARTERS
CABLE LAMPHOLDERS
for
DEPENDABILITY in fluorescent lighting



General Electric makes ballasts so you can install them and forget them. Their quietness, their ability to assure rated lamp life and light output, and their recognized reliability become your silent salesmen—to help keep your fixtures sold. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC

412-8

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Combine skilled workmanship, materials chosen by rigid quality standards, and 117 years of scale-building experience, and you have the reasons for the year-in, year-out precision of every Fairbanks-Morse Scale.

Users in every industrial field know of the endurance of these trusted weighing instruments . . . how they serve dependably even under severe conditions and sustained heavy-duty use.

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Fairbanks-Morse

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How to wire for sound *business*

ABOUT your products. If performance depends in any way upon the behavior of steel wire . . . if the wire's forming or fabrication characteristics have a bearing on cost or production flow . . . then of course it *is* sound business to make sure that the wire you use meets every requirement with *peak* effectiveness.

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So whatever your wire requirements may be, we want you to know that Worcester Wire Works is always ready to give *you* the intelligent, personalized service, the skilled performance in wire, that today helps many and many a manufacturer produce a better product at lower cost.

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WAGNER LITHO MACHINERY
Jersey City, N. J.
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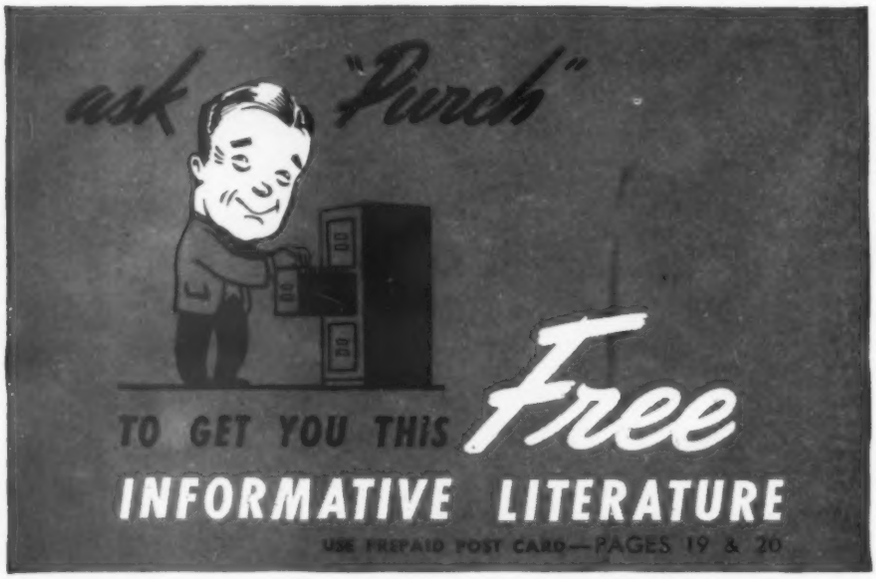

☐ **1. BONDERIZING** — New catalog, 44 pages, by text and illustration describes the Bonderizing metal treatment process for preserving fine finishes and retarding corrosion. Its applications on steel, aluminum, zinc, and their alloys are detailed. Catalog also contains information on Bonderite as an aid in deep drawing of steel and aluminum. Parker Rust Proof Co.

☐ **2. PUMPS** — Diversity of pumps and water systems are featured in new 180 page catalog No. G-47 just announced by the Deming Company. Sectional views and exterior views of each type of pump supplement detailed descriptions of construction and operation.

☐ **3. ABRASIVES & GRINDING WHEELS** — Handbook on Abrasives and Grinding Wheels, 108 pages, describes Norton Alundum and Crystolon abrasives, types of bond, explains wheel marking, the Norton symbols, specifications for tool and cutter grinding, weld grinding and cylindrical grinding, wheel speeds, general operating rules, diamond wheels; definitions of grinding terms, and information and selection tables. Norton Co.

☐ **4. ONION SKIN** — Portfolio available from the Millers Falls Paper Co., contains numerous direct mail suggestions printed on 25% cotton content onion skin.

☐ **5. BUSINESS FORMS** — Time-reducing and cost-cutting methods of streamlining business records and procedures are given in new sample portfolio available from Systems Department of Uarco, Inc. It contains business forms of various types used by comparable firms and organizations who have consolidated and simplified their records.

☐ **6. TAP CHUCK** — Small diameter tap chuck embodying accuracy and strength and featuring lightness in weight is described in Bulletin 47-T, Rubber-Flex Tap Chuck, issued by The Jacobs Manufacturing Co. Chuck is said to reduce tap breakage particularly in bottom tapping and to allow for quicker reversing and higher spindle speeds. Only three chucks are needed to cover range of taps #0 machine screw to ⅝" hand tap.

☐ **7. PROTECTIVE COATINGS** — New application specifications that give proved methods for corrosion-proofing metal and masonry surfaces with prufcoat protective coatings have been issued by Prufcoat Laboratories, Inc. Preparation of floors, walls, structural steel, pipes, tanks, machinery, etc., is described in detail, as well as application of the coating materials.

☐ **8. RECORDING OSCILLOGRAPH** — Multi-channel recording instrument said to provide the utmost in accuracy, reliability and sturdiness, as well as having a wide diversity in its fields of application, known as the Type 5-101B Recording Oscillograph is described in bulletin issued by the Consolidated Engineering Corp.

☐ **9. SYNTHETIC RUBBER** — Bulletin issued by the Mechanical Rubber Products Co. is an editorial resume of the various basic types of synthetic rubber, their properties and some of their principal applications, particularly with respect to molded products.

☐ **10. PERMANENT MAGNETS** — Unusually complete bulletin on the "Use, Design and Fabrication of Permanent Magnets" is offered by Thomas & Skinner Steel Products Co. It discusses the advantages and limitations of permanent magnets in current and potential applications.

☐ **11. HOSE CLAMP** — Bulletin describes the Aero-Seal worm drive hose clamp, which is available in cadmium plated spring steel or stainless steel. Clamp provides uniform clamping pressure all around hose, eliminating distortion of hose, and cramping, squeezing or pinching that may produce leaks. Maker states clamp will not distort or collapse thin-wall tubing. Aircraft Standard Parts Co., Inc.

☐ **12. SAFETY APPAREL** — Protective garments for men and women, welder's apparel, and a diversified line of gloves for varied industrial operations, goggles, mittens, aprons and numerous other protective products are covered by Catalog No. 16 issued by Olympic Glove Co.

☐ **13. STAMPING MANUFACTURERS**— "Blue Book of Stamping Manufacturers" has been issued by the Pressed Metal Institute. It shows (1) members; (2) geographical location; (3) facilities of active members.

☐ **14. FREEZE-DRYING**—Catalog 455A tells about Freeze-Drying Equipment for drying from frozen state under high vacuum. Process is said to offer great promise for preserving without refrigeration, for almost unlimited periods, certain foods, extracts, citrus juices, meats, milk and other products. F. J. Stokes Machine Co.

☐ **15. CONVEYORS**—Catalog 755 describes and illustrates portable flat conveyors for coal, coke and other non-abrasive materials; portable trough conveyors for sand, gravel, cinders and abrasive materials; general freight portable conveyors, and special conveyors, both portable and stationary. Trowbridge Conveyor Co.

☐ **16. TAPPING TOOL**—The Jarvis Torqomatic, tortionally-driven unit, universally adaptable torque-driven tapping tool that operates without pressure on the tap itself, is described in 8-page bulletin. They are available as built-in units to fit any type or make of drill press or tapping machine. The Charles L. Jarvis Co.

☐ **17. ROOFING-SIDING**—Booklet tells how to make galvanized roofing and siding last long. It is termed the "Repair Manual". It tells how to lay material, how to stop leaks in old roofs, and gives directions for painting. American Zinc Institute.

☐ **18. ELECTRIC FANS**—"Fans for 1947" is title of new Emerson catalog. This 28-page catalog gives design and construction specifications with complete performance data on desk fans, air circulators, ceiling fans, exhaust and cooler fans, etc. Emerson Electric Manufacturing Co.

☐ **19. FLUID PUMPS**—Bulletin describes new Denison fluid pump, which combines quiet operation with high pressure and high volume. These pumps, 3500 series, are of an axial piston, constant displacement type, and are known as the Denison high pressure, high volume, hydroilic pumps. While rated at 3500 psi for continuous operation, higher pressure is permissible for intermittent operation. Denison Engineering Co.

☐ **20. GUMMED TAPES**—Sample roll of Sterling "Tread" Gummed Tape and Trojan Gummed Tape, will be sent to you by The Gummed Products Co.

(Please turn to page 16)

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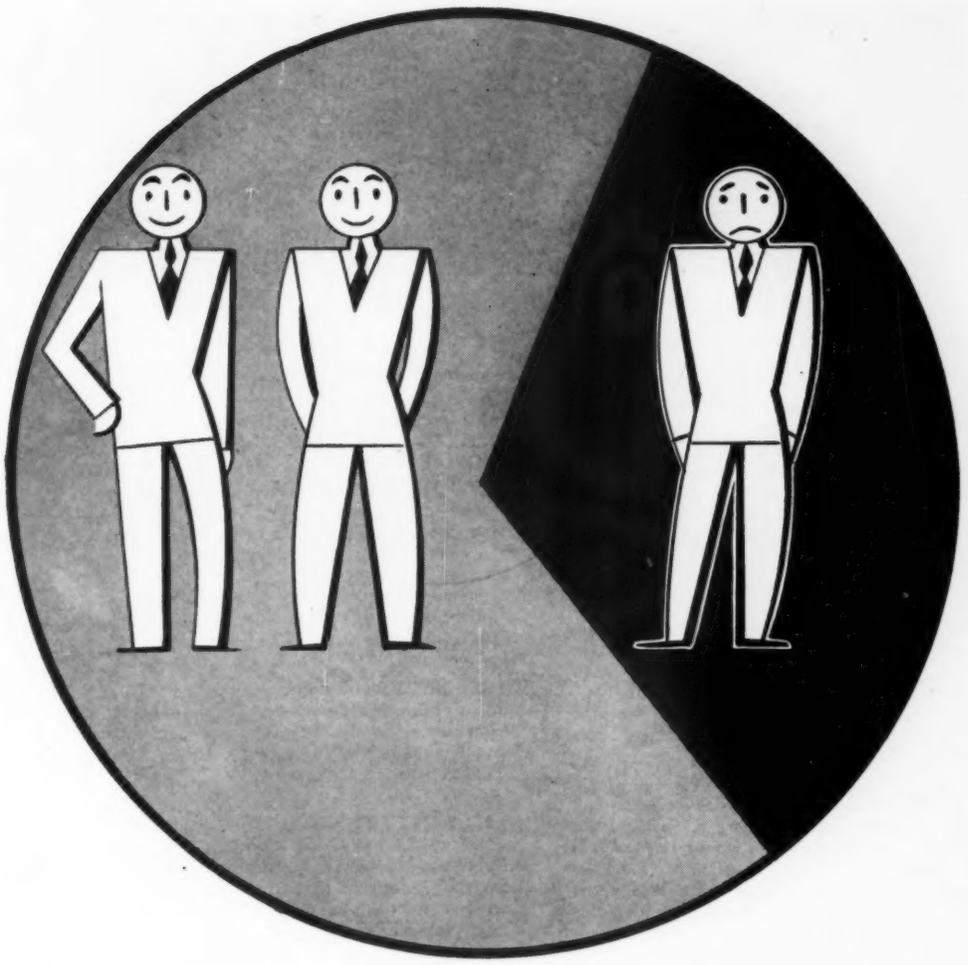

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Industrial concerns prefer
NICHOLSON FILES

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The big reason, of course, is that these files have everything which the user has every right to expect:

QUALITY – in steel, design, sharpness and long serviceable life – that through man-hour savings can readily cut file costs to the vanishing point.

UNIFORMITY – in shape, balance, cut and hardness – that under the sweeping Nicholson guarantee assures you *Twelve perfect files in every dozen.*

The best distributors in every industrial area sell Nicholson or Black Diamond file brands . . . because they find it to the best interests of both their customers and themselves.

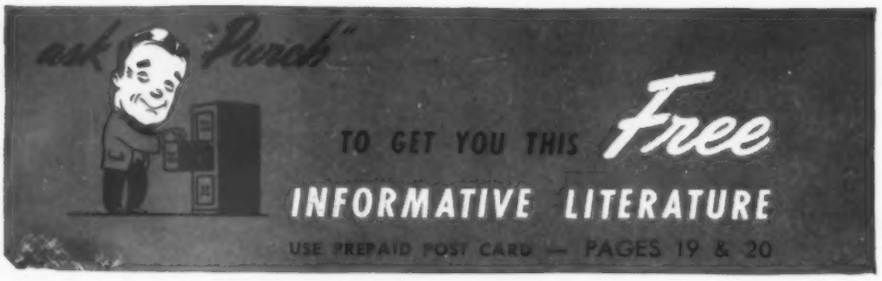
NICHOLSON U.S.A.

NICHOLSON FILE CO. • 28 ACORN STREET • PROVIDENCE 1, RHODE ISLAND

(In Canada, Port Hope, Ont.)

BLACK DIAMOND TRADE MARK

NICHOLSON FILES *FOR EVERY PURPOSE*



(*Continued from page* 14)

☐ **21. INDUSTRIAL APRONS**—"Retread Old Aprons" describes process for repairing industrial aprons, thus materially reducing apron bills. Columbus Glove Mfg. Co.

☐ **22. STENCIL MARKING**—What is styled the most complete catalog ever published about stencil marking, has been issued by the Marsh Stencil Machine Co.; 40 pages, printed in 3 colors. It describes modern methods of cutting and marking stencils, how to cut circular stencils, what size stencils should be used for various shipments, and how to use fountain marking brushes and keep them in operating condition.

☐ **23. DRILLING SWIVEL**—Bulletin No. 344 describes Ideal Type "F" swivel for drilling oil wells to moderate depths. It is illustrated with eight explosion photographs, dimensional blue print and chart showing the main bearing capacity. National Supply Co.

☐ **24. ELECTRICAL TOOLS**—Catalog No. 50 describes Metalmaster Electrical Tools—drills, hole saws, grinding wheels, bench grinders, heavy duty grinders, buffer and polisher units, flexible shaft equipment, etc. Bradford Machine Tool Co.

☐ **25. SPEEDS & FEEDS**—New circular "Cutting Speed and Feed Selector" which quickly gives proper speeds and feeds for all common machining operations on 8 types of Enduro stainless steel, and which also includes form cutting, milling, drilling and other operations usually performed on an automatic, is available from the Republic Steel Corp. The Selector also converts surface cutting speeds to spindle speeds for stock from 0.1" to 8" dia.

☐ **26. COATING ALUMINUM**—Comparative summary of coating methods for aluminum lists features and advantages of process developed by American Chemical Paint Co. for coating aluminum and its alloys with Alodine, either as a basis for paint or for protecting aluminum that is to be exposed unpainted in a corrosive environment.

☐ **27. CAPACITORS**—Catalog No. 20B, 56 pages, covers Sprague paper dielectric capacitors. Cardboard and metal tubulars, bathtub types, small rectangular series, large rectangular, cylindrical, ignition capacitors, screw-mounted, filters, special purpose paper dielectric, glass-to-metal seals, etc., are illustrated and described in detail. Sprague Electric Co.

☐ **28. TIMING MOTORS**—Haydon timing motors—a-c timing motors, and other devices, including repeat and interval timing, time delay relays, contactors, interrupters, clock fit-ups, elapsed time indicators and other apparatus, for nearly every timing application, are covered in bulletin 4-e. Haydon Manufacturing Co., Inc.

☐ **29. BRUSHES**—"Know your Brushes" is title of bulletin issued for the benefit of brush users, by the Solo-Horton Brush Co., Inc. If you are a buyer of brushes you will find it of much interest.

☐ **30. SAFETY STANDARDS**—Catalog listing approximately 200 standards covering safety and industrial health is available from the American Standards Association. Contents of each standard is described, simplifying location of standards for specific fields.

☐ **31. MATERIALS HANDLING**—Catalog 16, just released, covers lift jacks, platforms, floor trucks, bins, tanks, racks, skids, etc. Its 44 pages illustrate all types of Clark equipment for factory and warehouse use—shelf trucks, marking trucks, trailer trucks, sheet steel trucks, bin trucks, etc., etc. All Steel Welded Truck Co.

☐ **32. RIVETING**—New catalog issued by the Chicago Rivet & Machine Co., 48 pages, gives complete information on the use of split and tubular rivets, and tells about automatic feeding and setting with automatic setting machines. Floor and bench type machines, and single, double, triple and quadruple rivet setters are described in detail.

☐ **33. FOR GLASS USERS**—Purchasing Guide, catalog No. 47, on its line of glass cutters, glaziers' points, putty softeners, caulking guns, glass pliers, putty knives, etc., is available from the Glaziers' Tool Mfg. Corp.

☐ **34. SALVAGING CASTINGS**—Salvaging castings with machinable arc welds is subject of illustrated article in Inco Magazine, spring edition, Vol. XXI, No. 2, published by the International Nickel Co., Inc.

☐ **35. FOUNDRY DUST CONTROL**—New 32-page bulletin entitled "Schneible in the Foundry Industry" presents comprehensive story on foundry dust control and ventilation. Equipment is described and illustrated. Claude B. Schneible Co.

☐ **36. LINK V-BELT**—Veelos Link V-Belt, which maker states is adjustable to any length and adaptable to any drive, is described in detail in new catalog, which includes engineering data and 13 pages of application photos. Manheim Manufacturing & Belting Co.

☐ **37. HAND TRUCKS**—Circular describes the Wheel-Ezy hand trucks, showing single and double handled models. It shows "step-climber" feature. There are 28 models to choose from, with choice of wheels. The Rapids-Standard Co., Inc.

☐ **38. PRECIOUS METALS**—Laminated and solid precious metals for industrial use, are the subject of 4-page bulletin issued by D. E. Makepeace Co. Fabricated parts and assemblies are illustrated. Laminated precious metal permit the economical use of costly metals, give the desired electrical, mechanical or chemical qualities needed.

☐ **39. SYNTHETIC RUBBER INSULATIONS**—That is title of "Third Report to Industry" on Simplex synthetic rubber insulations, which discusses natural versus synthetic rubber for wire and cable insulations. Natural rubber, neoprene, and standard grades of GR-S and butyl are discussed. Simplex Wire & Cable Co.

☐ **40. SYNTHETIC CUTTING OIL**—Bulletin discusses Silver Chip, a non-petroleum oil product which is 100% soluble in water. It is exceptionally transparent, has minimum foaming tendency, and is featured by unusual stability and economy. Machinery Lubricants, Inc.

☐ **41. DRILL PRESSES**—Bulletin No. 90 describes the Canedy-Otto Manufacturing Company's line of drill presses—sliding head floor drills, bench drills, radial drills, and various models.

☐ **42. CONTROLLED AIR POWERED Devices**—Series of case histories describe in detail applications of Bellows "Controlled-Air" powered devices for various manufacturing operations. Parts processed, materials, operation, equipment, and other data are described and illustrated. The Fellows Co.

☐ **43. CARBIDE CUTTING**—Red-E ball bearing centers recommended for use with carbide cutting tools are described in Bulletin 471 issued by the Ready Tool Co.

☐ **44. FLOCK, FLOCK FINISHING**—Ten-page book on flock and flock finishing, containing 24 sample swatches in addition to text matter, describes the adhesives, methods of applying adhesives and flock on various surfaces, and lists numerous decorative and functional uses for flock. Behr-Manning.

☐ **45. STRAPPING TOOLS**—Bulletin describes A. J. Gerrard & Company's Bulkbinder heavy duty strapping tools, and Steelbinder that "ties anything", light or heavy, small, round, square or irregular, for safe shipment.

(*Please turn to page* 19)

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(*Continued from page* 16)

☐ **46. CUTTING, GRINDING Lubricants**—"How Lubricants Affect Cutting and Grinding" is subject of feature article in March-April issue of Oakite News Service. Article discusses wide variety of factors contributing to efficient cooling and lubrication in machine tool operations. Oakite Products, Inc.

☐ **47. TIME CYCLE CONTROLLERS**—Bulletin C305, 12 pages, describes The Bristol Company's new line of Model C500 Impulse-Sequence time cycle controllers.

☐ **48. SHEET METAL WELDING**—"Jigs & Fixtures for Sheet Metal Welding" is subject of 12-page article reprint, No. ADR-42, which covers application, metal joining processes and complex jigging problems. Air Reduction Sales Co.

☐ **49. INCINERATOR**—Bulletin describes the Plibrico Rubbish Destructor for industrial plants and institutions. It is built in 10 yd., 20-yd., 40-yd., and 60-yd. sizes. Plibrico Jointless Firebrick Co.

☐ **50. PRESS ROLLS**—Folder describes the B. F. Goodrich Company's steel jacketed Vulcalock press rolls, which provide a cover that is all soft rubber, and which is said to obviate blistering among numerous advantages.

☐ **51. EXPANSION JOINT**—Internally guided expansion joint for steam, water, oil and other pipe lines, in sizes from 1¼" to 20" in single and double joints, for working pressures up to 300 lbs., is subject of Bulletin 35-30-D issued by American District Steam Co.

☐ **52. PLUG VALVES**—Bulletin No. 617 describes Durco top lubricated plug valves made of Duriron and Durichlor which combine the corrosion resistance of high silicon iron with unusually effective lubricating and plus release features. The Duriron Co., Inc.

☐ **53. TOOLMAKER'S LATHE**—Bulletin 302, 24 pages, describes the Monarch Machine Tool Company's EE toolmaker's lathe, a 10-inch sensitive precision machine.

☐ **54. ABRASION TESTING**—Bulletin describes four Taber abraser accessories and five other standard abrasion-testing aids, abrading wheels and miscellaneous parts and supplies. Taber Instrument Co.

☐ **55. VISIBLE RECORD SYSTEMS**—Bulletin describes Vue-Fax vertical visible record keeping system. Units range from Handi-File with capacity of 2,400 to large Porto-Files that house up to 9,000 records. Three-margins permit complete over-all visibility. Federal Business Products.

☐ **56. PALLETS**—Informative folder on pallets which among other things shows use of pallets in handling many types of products, is available from General Box Co., and gives information on their construction.

☐ **57. PORTABLE COMPRESSORS**—Bulletin, 4 pages, describes 60, 105, 160, 210 and 315 cfm capacity portable compressors made by the Davey Compressor Co.

☐ **58. MAGNETIC CLUTCHES**—Catalog 226 on magnetic clutches and clutch-brake units is announced by Stearns Magnetic Manufacturing Co. It is termed a "complete text book on magnetic clutch application."

☐ **59. SCREW DRIVERS**—Catalog sheets detail the Vaco Products Company's lines of screw drivers of varied styles including Phillips, clutch head, recessed head cross slot, grip point, and also nut drivers and plastic hammers.

☐ **60. X-RAY DIFFRACTION**—Folder, 6 pages, R1063, titled "Industrial Control with X-Ray Diffraction" is available from North American Philips Co., Inc. The text describes the principles of X-Ray diffraction and how it is performing varied jobs in varied industrial applications.

☐ **61. REFRACTORIES**—Super Refractories for the Process Industries is the title of bulletin issued by The Carborundum Company, Refractory Division, which deals particularly with the qualities and applications of "Carbofrax" bonded silicon carbide refractories containing 85% or more SiC in the finished state.

☐ **62. MILLING Machine**—Bulletin of 12 pages gives detailed information about the Pratt & Whitney Company's automatic, tracer controlled Type BL Keller milling machine, which faithfully reproduces master form. Right and left hand fixture is available. Standard equipment includes single spindle machine and three spindle 8" and 10" center distance machines.

☐ **63. GAS CARBURIZING** — Bulletin SC-134, "Modern Gas Carburizing Processes and Equipment" is said to constitute "comprehensive compilation on subject of modern gas carburizing" for surface hardening and carbon restoration. Surface Combustion Corp.

☐ **64. MULTI-WALL BAGS**—Five case histories, Nos. 5, 7, 10, 11 and 12, citing savings in packaging costs and labor costs, plus faster production, are available from the St. Regis Sales Corporation.

☐ **65. INDUSTRIAL FINISHES**—Complete catalog of revised Technical Data Bulletin on lacquers, enamels and synthetics made by the Maas & Waldstein Co., is now available. It contains up-to-the-minute information about the use and characteristics and application of the various finishes.

☐ **66. VALVES**—New 201-page Valve Cross Reference Chart released by The Ohio In-Jector Co. contains a complete listing of OIC valve numbers in order with their description.

☐ **67. KEYWAY BROACHES**—Minute Man keyway broaches and sets for sixty-second hand broaching of any size and depth keyway "in any piece of work" are subject of bulletin just released by The du Mont Corporation.

☐ **68. FOUNDRY EQUIPMENT**—Oil and gas burning equipment for foundries—cupola lighting, mold drying, ladle heating, core baking, furnace heating—are covered by catalog 1043. Hauck Mfg. Co.

☐ **69. RACK COATING**—Pen-Kote 590—a non-flammable, odorless, Saran-base rack coating which withstands chlorinated degreasing solvents as well as all plating and cleaning solutions, is available from Peninsular Chemical Products Co. A Free Trial offer is included.

(*Please turn to page* 20)

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(*Continued from page* 19)

☐ **70. PACKAGING**—Excelsior pads, cushions and wood-wool pads for packaging radio tubes, glassware, jugs, furniture, bottles, etc. are described in booklet issued by American Excelsior Corp.

☐ **71. CAPACITORS**—Catalog No. 30 describes fixed mica-dielectric capacitors for wide range of industrial and commercial applications. Sample request forms available. Sprague Electric Co.

☐ **72. BUSHING & BAR STOCK**—Complete line of centrifugally cast tubular bushing stock and chill-cast solid bar stock in a wide range of diameters and in standard 13" lengths, is covered by Shenango-Penn Mold Company's bulletin No. 145.

☐ **73. LIFTING MAGNETS**—Catalog gives detailed information on construction of magnets and magnet controllers, as well as sizes, capacities and applications for all models. The Ohio Electric Manufacturing Co.

☐ **74. PLASTIC COATING**—Plastic protective coating, Koppers Bituplastic, which waterproofs and vapor seals, is described in Wailes Dove-Hermiston Corporation's bulletin. Bituplastic is a highly refined, easily workable coal tar pitch coating. It is applied cold with brush or standard spray, and may be used on metal, concrete or masonry surfaces exposed to the weather. Can be applied to damp surfaces, and is unaffected by dry temperatures —50° to plus 500° F.

☐ **75. MASONRY SAWS**—Clipper portable masonry saws, powered to efficiently cut the most dense fire or acid brick, concrete, glazed brick tile, etc., and blades, are described in bulletins available from The Clipper Manufacturing Co.

☐ **76. CENTRIFUGAL PUMPS**—Warren single stage, double suction centrifugal pumps, Types DM and DL and DBY, are described in bulletins Nos. 227 and 236. Warren Steam Pump Co., Inc.

☐ **77. MACHINE TOOLS** — Hy-Draulic planers, shapers, slotters and shaper planers are illustrated and described in detail in the Rockford Machine Tool Company's Catalog 1947.

☐ **78. CLEANING COMPOUND**—Mulsirex, new emulsifying type cleaning compound to be used with kerosene and other petroleum cleaning products to provide greater safety and efficiency in removing heavy deposits of oil and light grease from all types of equipment is described in Technical Data Bulletin A-447, Turco Products Inc.

☐ **79. WALL CLOSET FITTINGS**—AIA File 29C describes wall closet fittings. J. A. Zurn Mfg. Co., Plumbing Divn.

☐ **80. INDUSTRIAL CONTROLS**—"Industrial Control Devices", catalog No. 8302, contains detailed information on electric and pneumatic automatic control systems. Brown Instrument Co.

☐ **81. WELDING CONTROLS**—Synchro-Trol, new line of synchronous-precision a-c resistance welding controls in unified, factory-assembled package, is described in booklet B-3899, 18 pages. Westinghouse Electric Corp.

☐ **82. GRINDING WHEELS**—Norton Grinding Wheels are subject of new 28-page booklet issued by Norton Co., Worcester, Mass. It describes Alundum, and Alundum abrasive, Crystolon abrasives, different bonds, indicates grinding wheel marking and gives detailed information on the numerous Norton Grinding wheels.

☐ **83. STORAGE BATTERIES**—Catalog describes Gould Kathanode Glassklad construction batteries, and Plante batteries with ribbed, pure-lead positive plates. Gould Storage Battery Corp.

☐ **84. MATERIALS HANDLING**—Yardlift-40 and Yardlift 20 Trucktractors for moving one- and two-ton loads smoothly over bumpy yards and crossings, slick floors and docks, are described in specification bulletins issued by Clark Equipment Co.

☐ **85. NUTS**—Samples of Flexloc self-locking nuts in regular and thin types, which stay locked in any position on a threaded member, will be sent to you by the Standard Pressed Steel Company.

☐ **86. GRATING** — Paperweight-size sample of grating, which will give you a "close up" of construction, will be sent to you by the Blaw-Knox Division of Blaw-Knox Co. Farmers Bank Bldg.

☐ **87. FORMS**—Booklet "Q's and A's" issued by the Standard Register Co. tells how to buy continuous, marginally punched forms by exact specifications. It's a practical tool for measuring form values by performance standards.

☐ **88. FASTENERS**—Stainless fasteners are detailed in 83-page catalog available from Allmetal Screw Products Co., Inc. It is an aid to selecting the correct size and type of non-corrosive fastening device.

☐ **89. IMPACT TOOL**—New all-purpose electric impact tool for applying and removing nuts, drilling, reaming, tapping, driving and removing screws and studs, hole saw work, run wire brushes, driving augers, etc., is described in bulletin just released by Ingersoll Rand Co.

☐ **90. CUTTING FEED & SPEED Selector**—A new circular "Cutting Speed and Feed Selector" quickly indicates proper speeds and feeds for all common machining operations on eight types of Republic Enduro Stainless steel. Form cutting, milling, drilling and other operations usually performed on an automatic are included. The selector also converts surface cutting speeds to spindle speeds for stock from 0.1" to 8" diameter. Republic Steel Corp.

☐ **91. PROTECTS BEARINGS**—Magnetic plug for installation in gear and bearing housings, which pulls iron and steel particles out of lubricant as fast as they are ground off moving parts, is described in bulletin. **Sample plug** will also be sent to you for testing—indicate size wanted. Lisle Corporation.

☐ **92. MOTORS**—Bulletin C-118 tells how Reliance Series C motors are designed and built to eliminate lubrication worries. In most cases these factory-lubricated motors are said to perform dependably for years with no additional lubrication. Reliance Electric & Engineering Co.

☐ **93. TECHNICAL PLASTICS**—Catalog describes Synthane technical plastics in detail. These are available in sheets, rods, tubes, fabricated parts, molded-laminated, molded-macerated. Synthane Corporation.

☐ **94. TUBING, Close-Tolerance**—Bulletin of 20 pages describes Rockrite close-tolerance tubing for the manufacture of cylindrical or ring-shaped parts. Minimum ovality and high concentricity make for less waste metal and faster cutting speeds. Rockrite close tolerances may be had in heavy-wall, bi-metal, taper, and long-length tubing. Tube Reducing Corporation.

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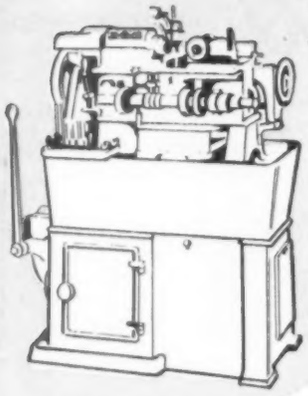

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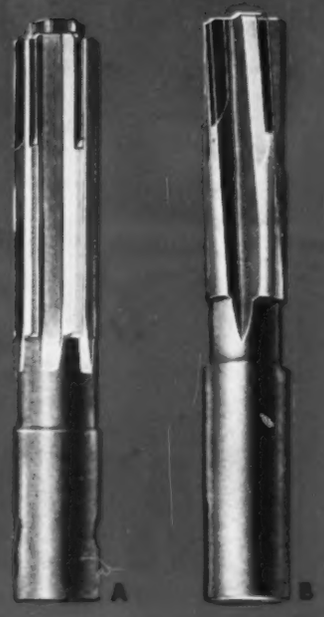

Staples CARBOLOY-TIPPED CEMENTED CARBIDES **STUB SCREW MACHINE REAMERS**

(A) Staples Carboloy - tipped Expansion Stub Screw Machine Reamer.

Staples patented expansion principle permits easy adjustment of tool to .0001". Expansion plug limited to $^{3}/_{32}$" extension beyond tool end (width of cut-off blade) eliminates possibility of plug striking bottom of drilled hole. Can also be furnished with plug flush with tool end if specified.

(B) Staples Carboloy - tipped Solid Stub Screw Machine Reamer.

Staples stub screw machine reamers cut production costs on automatic screw machine operations by eliminating frequent down time for reamer sharpening. Carboloy surfaces are highly resistant to wear—far exceed H.S.S. on tool life. Tools hold accurate diameters, permitting long runs on exceptionally close tolerance work.

These reamers are made both in solid and expansion types. Tools are stocked semi-finished and are ground to size specified with tolerance of .0003" on diameter. A complete range of sizes is available for immediate delivery.

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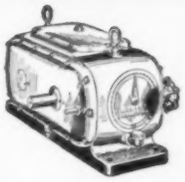
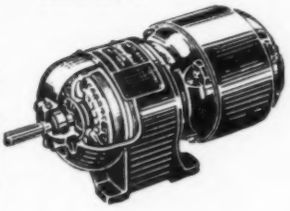
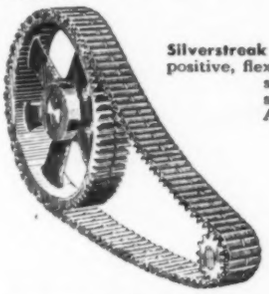


P.I.V. Gear Speed Changer permits infinite variation of speed while machine is running; holds set speed indefinitely, without slip or creep. All metal wholly enclosed. Details in Book 1874.



Electrofluid Drive combines hydraulic coupling with standard induction motor; reduces starting current; avoids "overmotoring" — absorbs shock; protects machinery. Details in Book 2085-A.



Silverstreak Silent Chain Drive gives positive, flexible transmission without slip at high speeds. Runs slack on short centers. Ask for Data Book 125.

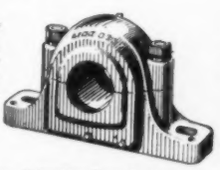
Silverlink Roller Chain Drive for high or low speed transmission; coordinating rotation of several shafts in either direction; short or long centers. Single or multiple widths. Details in Book 1957.

Steel, Promal and Malleable Chain Drives where extraordinary strength is needed, on slow and medium speeds, these chains are the standard by which performance is gauged. Data Book 1994.

V-Belt Drives. The Link-Belt Line of Power Transmission Machinery includes a complete line of Texrope V-Belt Drives. Catalogs on request.

Ball Bearing Mounted Units for light and medium duty. Pillow blocks, with solid or split housings, flanged, cartridge and take-up units, self-aligning, in fixed or floating types. Ask for Book 2094.

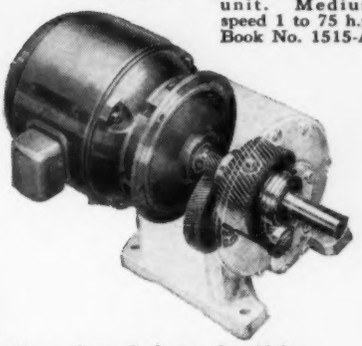
Roller Bearing Mounted Units for heavy duty service, self-aligning, for fixed or floating shafts, press-fit or adapter type, in split pillow blocks. Ask for Book 2095.

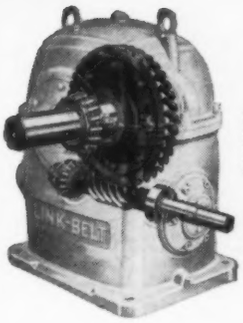


Unmounted Ball and Roller Bearings provide self-alignment for radial, thrust or combination loads. Offer great economy of application. Details in Books 2094 and 2095.

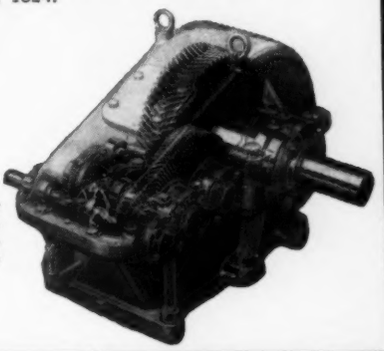
Babbitted Bearings in widest selection of types; solid or split housing; grease or self-oiling; light and heavy duty service. Data in Book 1997.

Motorized Helical Gear Speed Reducer, self-contained power unit. Medium speed 1 to 75 h.p. Book No. 1515-A.





Worm Gear Reducers for high ratio reductions horizontal or vertical drive shafts. Data in Book No. 1824.



Herringbone Gear Reducers for large reductions in limited space. High shock resistance. Single, Double or Triple Reductions. Data Book No. 1819.

THERE'S A LINK-BELT SPEED REDUCER FOR EVERY SITUATION AND SERVICE

Any industrial application for a speed reducer can be filled with a Link-Belt unit — and satisfactory results assured. Link-Belt manufactures all three standard types, and Link-Belt power transmission specialists can offer reliable recommendations as to size and type to suit your precise need.

In respect to any unit in the broad Link-Belt line, Link-Belt engineering advice on your power transmission problems is completely unbiased.

10,633-A

LINK-BELT COMPANY

The Leading Manufacturer of Conveying and Mechanical Power Transmission Machinery

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8. Offices, Factory Branch Stores and Distributors in Principal Cities.

THE SYMBOL OF QUALITY · LINK-BELT · LB

LINK-BELT *Power Transmission Machinery*

Rx...for a healthy business

Wherever you may fit in the business of guarding America's health, chances are that one or more of the Monsanto Chemicals listed below contributes to making yours a healthy business.

For many years Monsanto has been a leading producer of pharmaceuticals, supplying manufacturers of medicinal preparations with a long list of products ranging from aspirin (acetyl salicylic acid) to sulfanilamide. Other Monsanto products are widely used in many germicidal and disinfectant formulations. Still another large and important group serves to supplement America's diet with minerals important to good health. These are Monsanto's phosphate compounds derived from Monsanto-produced phosphorus of exceptional purity.

If you would like to know more about any of these Monsanto products that help to make the business of guarding America's health a healthy business, your nearest Monsanto office will be glad to give you full details. MONSANTO CHEMICAL COMPANY, St. Louis 4. District Sales Offices: Akron, Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Dayton, Detroit, Houston, Los Angeles, New York, San Francisco, Seattle, Springfield, Washington, D. C. In Canada: Monsanto (Canada) Limited, Montreal.

Write for folder on these products

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Acetophenetidin, U. S. P.
Acetyl Salicylic Acid, U. S. P.
Benzoic Acid, U. S. P. and Tech.
Benzyl Benzoate
Caffeine, U. S. P.
Caffeine, Citrated, U. S. P.
Calcium Pyrophosphate
Chloral Hydrate, U. S. P.
Chloramine T, U. S. P.
Dicalcium Phosphate
Dichloramine T., N. F.
Disodium Phosphate
Ferric Orthophosphate
Glycerophosphates, N. F.
Glycerophosphoric Acid
Iodized Mixtures
Magnesium Phosphates
Methyl Salicylate, U. S. P.
Monocalcium Phosphate
Phenol, U. S. P.
Phenolphthalein
Phosphoric Acid, U. S. P.
Saccharin, U. S. P.
Salicylates
Sodium Benzoate, U. S. P.
Sodium Ferric Pyrophosphate
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MONSANTO
CHEMICALS AND PLASTICS

SERVING INDUSTRY...WHICH SERVES MANKIND

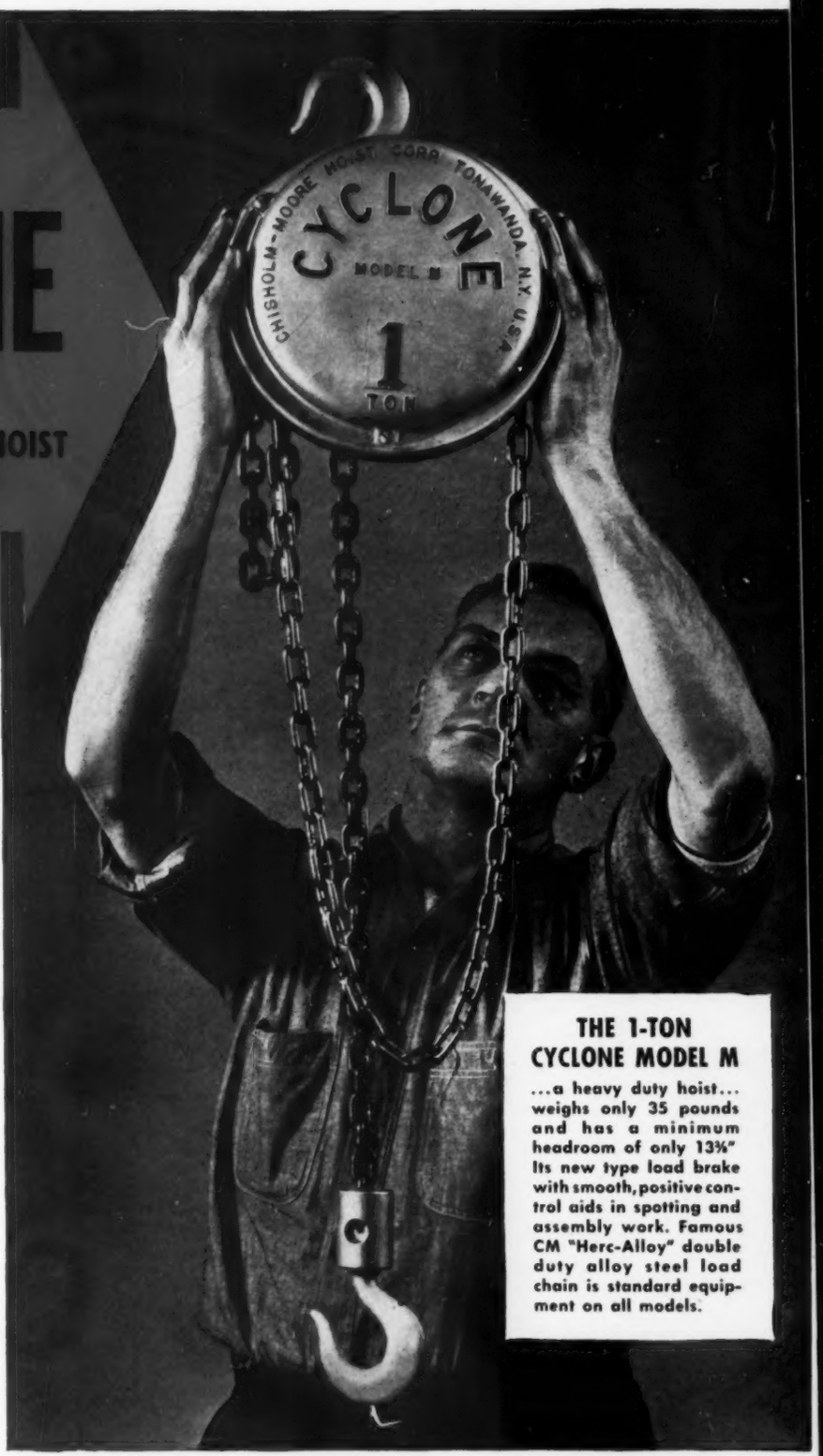
NEW

CM CYCLONE

Model M

HEAVY DUTY HIGH SPEED HOIST

Capacities from ¼ ton up



THE 1-TON CYCLONE MODEL M

...a heavy duty hoist... weighs only 35 pounds and has a minimum headroom of only 13⅜" Its new type load brake with smooth, positive control aids in spotting and assembly work. Famous CM "Herc-Alloy" double duty alloy steel load chain is standard equipment on all models.

No matter how you look at it...design, construction, durability, efficiency...the new Cyclone Model M Heavy Duty Hoist outclasses all other hoists by a wide margin. For the Model M is fundamentally different...and better...a true production line tool. Today's stronger alloys of steel and Alcoa aluminum, compact design, precision ball bearings at all rotating points and sealed-in lifetime lubrication combine to make the Cyclone Model M lighter, stronger, more efficient and easier operating. Thousands are already in service on a multitude of factory jobs daily demonstrating their superior performance. *Ask your distributor* to show it to you.

LOOK AT THESE ADVANTAGES

96% EFFICIENCY

conserves worker energy and increases productivity

42% FEWER PARTS

simplifies maintenance

63% LESS WEIGHT

yet definitely a heavy duty hoist

Plus SEALED-IN LIFETIME LUBRICATION

prolongs life...reduces wear

Plus HERC-ALLOY

America's First and Safest Steel Load Chain

CHISHOLM-MOORE

HOIST CORPORATION

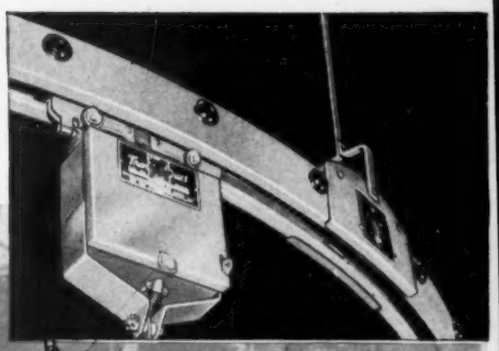
(Affiliated with Columbus-McKinnon Chain Corporation)

GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.

SALES OFFICES: New York • Chicago • Cleveland • San Francisco • Los Angeles

There's a "Knack" to it . . .
this making of springs for mechanical
things . . . keeping many orders in motion,
some big, some small . . . using all kinds
of materials . . . in all degrees of precision.
Toss your requirements to us . . .
for plain production or engineering
help. Special small automatics make
short work of flat and coiled springs,
small stampings and formed wire pieces.
The
WILLIAM D. GIBSON COMPANY
1800 Clybourn Ave., Chicago 14, Illinois
DIVISION OF ASSOCIATED SPRING CORP
Smooth Working
GIBSON-SPRINGS

Power takes a trolley ride*



POWER travels with the job when your cranes, hoists and portable tools are electrified by BullDog Industrial Trol-E-Duct.

It takes only an eight-ounce pull to put power at a workman's elbow—with no danger from entangling extension cords and no possibility of accidental contact with "live" wires.

The moving trolleys, collecting current from bus bars enclosed in a rigid steel duct, provide a source of power that is safe, convenient and economical.

Slotted its entire length, Industrial Trol-E-Duct provides a continuous electrical outlet that completely eliminates the need of rewiring or adding new fixed outlets. Maintenance costs are minimized, because all current-carrying bus bars are firmly supported in the duct casing and long extension cords are unnecessary.

Your plant can have all the advantages of this modern electrical distribution system if you consult a BullDog Field Engineer right away. He'll give you full technical information and show you a BullDog installation near your own plant. Or, if you'd like descriptive literature, write BullDog direct.

***With BullDog Industrial Trol-E-Duct**

ADEQUATE WIRING SERVES AND SAVES

BULLDOG

ELECTRIC PRODUCTS COMPANY

BEFCO

BullDog manufactures Vacu-Break Safety Switches — SafToFuse Panelboards — Superba and Rocker Type Lighting Panels — Switchboards — Circuit Master Breakers — "Lo-X" Feeder BUStribution DUCT — "Plug - in" Type BUStribution DUCT—Universal Trol-E-Duct for flexible lighting—Industrial Trol-E-Duct for portable tools, cranes, hoists.

Detroit 32, Michigan. Field Offices In All Principal Cities. In Canada: BullDog Electric Products of Canada, Ltd., Toronto.

MORSE
Spring Tempered Shank has high tensile strength to absorb torsional stress and shock.
Super High Speed Steel Head is butt-welded on shank, for greatest cutting action.
Note Expansion Feature which allows compensation for wear—giving long life to cutting head. Hollow head adjusting screw is countersunk to permit grinding upon centers.
No. 1734
TAPER SHANK
No. 1735
STRAIGHT SHANK

Like Tabby...

MORSE *Expanding Chucking* REAMERS

have more than One Life

...and Longer Life per grind when reground

You're looking at a reamer that can really take on a volume of work! Due to its *expansion* feature, it can be reground and reground each time it's worn slightly below size. The cutting head is Super High Speed Steel —butt-welded onto a spring tempered shank. Result: An expanding chucking reamer designed for rugged duty, long life and maximum cutting efficiency.

Morse makes a full line of reamers that will do every reaming job to your tolerances. Over 80 years of Morse engineering know-how pays off, too, in drills, cutters, taps, dies and special tools that step up volume and lower your costs. Your Industrial Supply Distributor can obtain the Morse recommendation that fits the tool to *your* job.

Accuracy, Quality, Uniformity: the MORSE Code of Cutting-Tool Manufacture

MORSE TWIST DRILL & MACHINE COMPANY

The Original Manufacturer of Twist Drills

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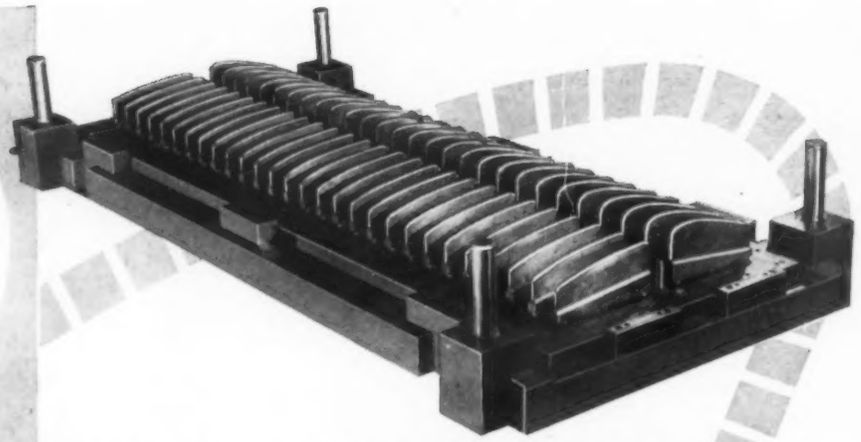
when you must maintain quality and still cut costs..



eventually the search leads to *SPEED TREAT*

Republic Aviation had a problem . . . how to build a quality all-metal plane, big enough to carry four people and baggage . . . at a price that would be attractively low. Today's amphibian Seabee was the answer, but it took unusual skill plus patience in determining materials and methods.

For example, the stiffening beads formed in the wing and tail skin-sheet sections eliminated numerous standard airframe members. Here Holliday *SPEED TREAT* provided a real economy. The die shown above for forming the beads, could have been costly. By using free machining fine-finish *SPEED TREAT* for the inserts total cost was surprisingly low.

For quality work at lower cost . . . in die and mold making or for parts that require considerable machining, remember Holliday *SPEED CASE* or *SPEED TREAT* steel plate. Let us give you the facts and you be the judge.

W. J. HOLLIDAY & CO., INC.

SPEED CASE – SPEED TREAT Plate Division

HAMMOND INDIANA

Plants at Hammond and Indianapolis, Indiana

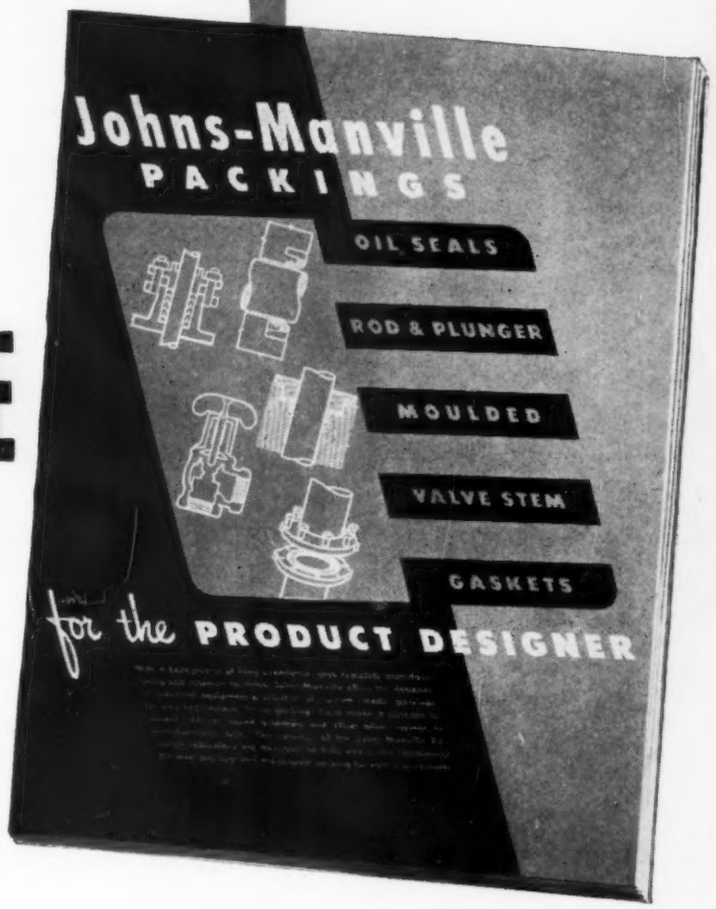
SPEED CASE AND SPEED TREAT STEEL PLATES DISTRIBUTED FROM THESE WAREHOUSES IN ALL PLATES SIZES

AKRON 1, Ohio
The Burger Iron Company
BUFFALO 5, New York
Beals, McCarthy and Rogers
BOSTON 10, Massachusetts
Brown-Wales Company
DETROIT 7, Michigan
Peninsular Steel Co.
HOUSTON 1, Texas
Earle M. Jorgensen Co.
LOS ANGELES 54, California
Earle M. Jorgensen Co.
MEMPHIS 2, Tennessee
Pidgeon-Thomas Iron Co.
NEWARK 5, New Jersey
Grammer, Dempsey & Hudson
OAKLAND 7, California
Earle M. Jorgensen Co.
PHILADELPHIA 34, Penna.
Horace T. Potts Co.
CANADA: Toronto 2, Ontario, Peckover's, Ltd.

Holliday *SPEED TREAT* is a medium carbon, open hearth, free machining steel plate. One of the Seabee bead forming dies is shown above, with 56 inserts made of *SPEED TREAT*. Thomas Pryde of Pryde Tool & Die Company, well-known tool and die maker of St. Clair Shores, Michigan, worked closely with Republic in the design of the dies . . . and provided the completed die sets with *SPEED TREAT* inserts. The individual inserts were flame-cut from *SPEED TREAT* X-1545 plates, machined to size, and flame-hardened after installation in the die set.

W. J. HOLLIDAY & CO. 91 1850 YEARS of STEEL 1941

Send for this *New* PACKING GUIDE



If you're looking for a packing that will help you simplify design, speed assembly or reduce production costs, here is a booklet you should have!

Prepared by J-M's engineering department especially for the product designer, it presents up-to-the-minute factual information about the Johns-Manville Packings listed below . . . packings that have become "standard equipment" with manufacturers of many types of products. It includes specifications, sizes and other data in handy tabular form to save time, simplify selection.

"Johns-Manville Packings for the Product Designer" is yours for the asking. To obtain your copy, simply mail the coupon.

COVERS THE FOLLOWING J-M PACKINGS:

J-M Sea Rings—the rod and plunger packing that automatically seals on the work stroke, releases on the return.

J-M Clipper Seals—an efficient lubricant-retaining, dirt-excluding oil seal of unique design.

J-M Moulded Packings—custom made exactly to your specifications for hydraulic and pneumatic equipment.

J-M Die Formed Rings—precision manufactured to insure perfect mechanical fit, speed product assembly.

J-M Kearsarge—the rod packing with the accordion folded center block that acts as a reservoir for the lubricant.

J-M Flexible Metallic Packings—both all metal and semi-metallic packings for high speeds, pressures and temperatures.

J-M Interlocked—the square braided packing with no jackets to wear through, no plaits to loosen.

J-M Gaskets—cut exactly to specifications from a wide variety of gasketing materials.

* * *

Also J-M Gasketing Tapes, Groove Packings, and Wick and Rope Packings.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville *PACKINGS & GASKETS*

Johns-Manville
Box 290
New York 16, N. Y.

Send me a copy of your free booklet: "Johns-Manville Packings for the Product Designer."

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COMPANY_____

STREET AND NO._____

CITY_____ ZONE____ STATE_____

"IT'S A PLEASURE TO USE CIRCLE Ⓑ BOLTS"

● Circle Ⓑ Bolts and Nuts are noted for their uniform size and strength . . . they always fit exactly right. That's why workmen are happier when you supply them with these quality fasteners . . . why they'll get your jobs done faster and better at lower cost to you. It's an easy matter to enjoy these advantages . . . merely make it a practice to specify Circle Ⓑ fasteners everytime you buy.

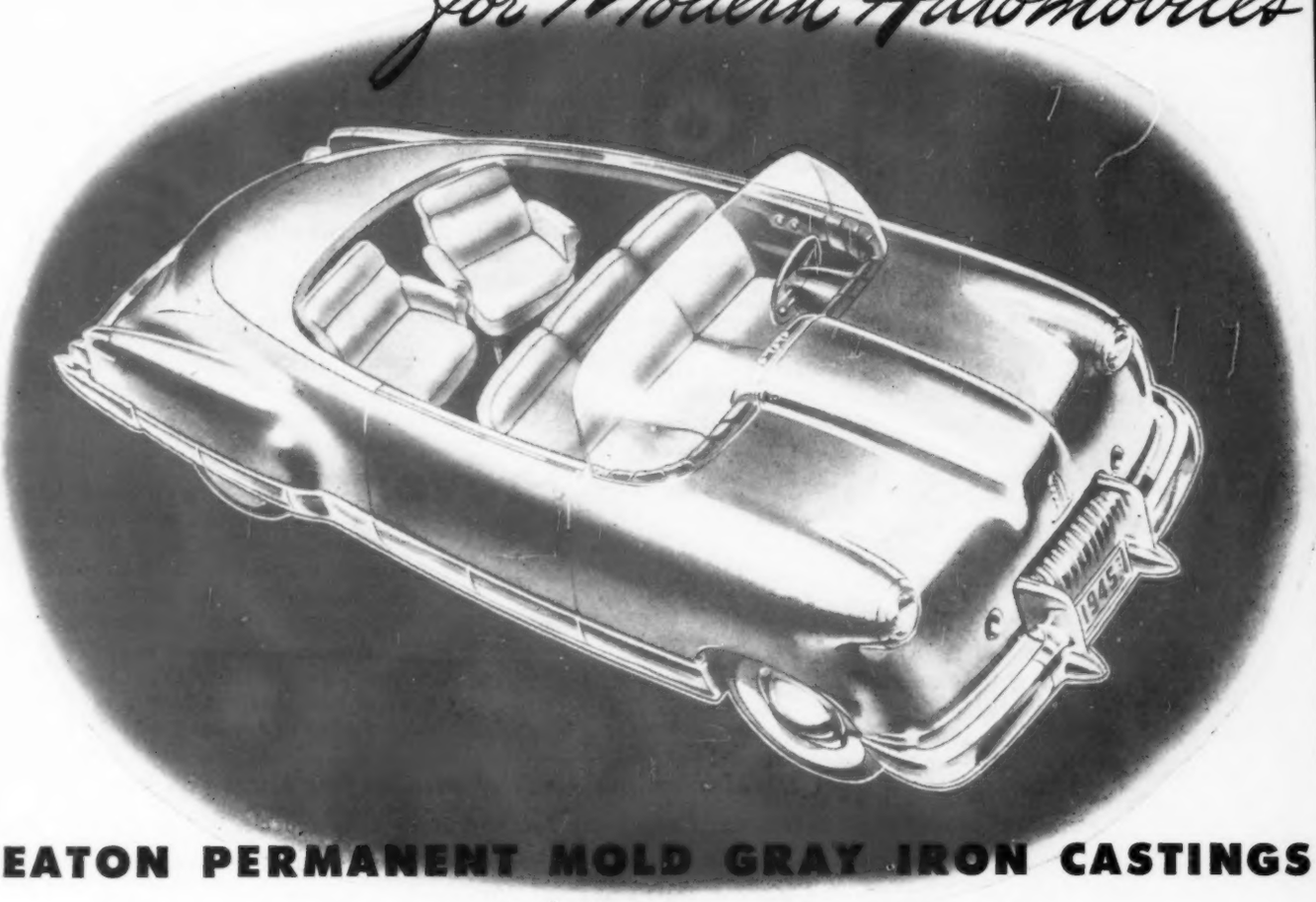
Ⓑ BUFFALO BOLT COMPANY

NORTH TONAWANDA, N. Y. • SALES OFFICES IN PRINCIPAL CITIES

Export Sales Office: Buffalo International Corp., 50 Church Street, New York City

LONG LIFE AND EFFICIENCY

for Modern Automobiles



EATON PERMANENT MOLD GRAY IRON CASTINGS

THE EATON PERMANENT MOLD MACHINE IS A SYMBOL OF THE QUALITY OF GRAY IRON CASTINGS PRODUCED BY THE PERMANENT MOLD PROCESS.

Uniform structure throughout the casting, freedom from growth, ability to take a high surface finish, and free machinability have led to the use of millions of Eaton Permanent Mold Gray Iron Castings annually in the automotive industry. This is equally true in domestic appliances, business machines, and related industries.

Eaton Permanent Mold Gray Iron Castings are particularly recommended for applications where liquids must be held under pressure; a dense non-porous structure assures freedom from leakage.

Eaton Foundry Division engineers will be glad to discuss the application of Eaton Permanent Mold Gray Iron Castings to your product.

Send for your copy of the illustrated booklet, *"A Quick Picture of the Eaton Permanent Mold Process for producing Gray Iron Castings."*

© 1947. EATON MFG. CO.

EATON

MANUFACTURING COMPANY

FOUNDRY DIVISION

9771 French Road • Detroit 13, Michigan

FUSETRONS

Hold Harmless Overloads—
Prevent Needless Shutdowns

Many Companies Have Proven It...

For Example—

"Formerly we were troubled by two kinds of needless fuse blowings in our milling machine department. Frequently the operators take too deep a cut in the material on which they are working, building up a momentary overload. Ordinary fuses blew so frequently on this type of overload that it was necessary to install oversize fuses, robbing the circuit of proper protection.

"Our other difficulty came when several machines would start operating simultaneously after rest periods or the lunch hour, blowing the fuses in the main switch, thus shutting down all the machines of the department.

"In June, 1945, Mr. Edward Lambert, our Chief Electrician, solved both difficulties by installing 20 ampere 250 volt Fusetrons in the 30 ampere switches on the individual machines and 200 ampere 250 volt Fusetrons in the main switch. He reports that no outages have occurred since that was done."

Lloyd B. Benham, V. P.
PORTER CABLE MACHINE CO.
Syracuse, New York

BUSS

Keep Electrical Equipment Operating Without Sacrificing Protection

Chart shows 30 ampere 250 volt fuses. Other sizes and 600 volt ratings show similar results.

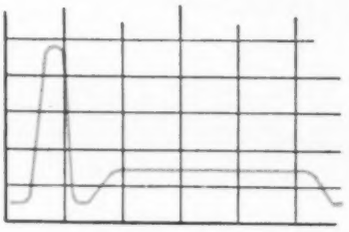
Buss Fusetrons have tremendous time-lag. They *can* hold harmless overloads, yet provide protection against dangerous overloads or short-circuits because they combine a fuse with a thermal cutout.

Here's how the time-lag of Fusetrons compares with that of ordinary fuses:

It is readily seen from this chart why Fusetrons hold harmless overloads and keep circuits operating instead of opening and causing useless shutdowns. Ordinary fuses and other protective devices cannot do this job.

Here's how Fusetron time-lag will work for you. AC motors require a current of 3 to 9 times their rating for starting. This surge of current often causes ordinary fuses to open.

Fusetrons have the capacity to absorb this high starting current without opening, even when the type of load causes starting current to hang on for limited periods.



In normal operation overloads often occur that are heavy but short lived—or light overloads hang on. In either instance they are harmless—yet they may cause ordinary fuses to open.

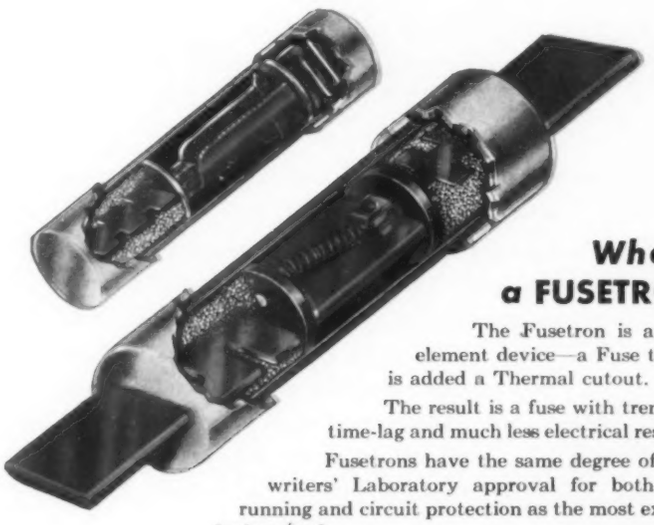
Fusetrons hold such harmless overloads—and keep circuits in operation.

Fusetrons Also Prevent Needless Blows on Mains and Feeder Circuits

Even when all motors on a circuit start at one time, Fusetrons will not open. For example: four 15 ampere motors on a circuit would ordinarily be protected by 90 ampere fuses. If these 4 motors start at one time the combined starting current is approximately 360 amperes. At this load a 90 ampere fuse would open in about 3 seconds—before the motors could start—BUT A 90 AMPERE FUSETRON WILL HOLD 24 SECONDS, ample time for all motors to start.

So, with Fusetrons installed in the mains, feeders and all branch circuits, shutdowns caused by needless opening of fuses or other forms of protective devices on harmless overloads are entirely wiped out.

Fusetrons Give Many Other Kinds of Protection Heretofore Not Available



What is a FUSETRON?

The Fusetron is a DUAL element device—a Fuse to which is added a Thermal cutout.

The result is a fuse with tremendous time-lag and much less electrical resistance.

Fusetrons have the same degree of Underwriters' Laboratory approval for both motor-running and circuit protection as the most expensive devices made.

Made to the same dimensions as ordinary fuses, Fusetrons fit all standard fuse holders.

Obtainable in all sizes from 1/10 to 600 ampere in both 250 and 600 volt types. Also in tamper-resisting type (Fustats) for 125 volt circuits.

Their cost is surprisingly low.

Fusetrons do everything fuses do, as is confirmed by the Underwriters' Laboratories' Label, and in addition...

* Provide simplest way to stop burnouts from single phasing. * Make burnout protection of SMALL motors simple and inexpensive. * Give thermal protection to panelboards and switches. * Prevent needless blows caused by heating in panels and switches. * Permit use of larger motor or adding more motors on circuit without installing larger switch or panel. * On new installations, proper size switches and panels can be used instead of oversize. * Protect motors against burnout. * Give double burnout protection to large motors. * Protect coils, transformers and solenoids against burnout.

Get All The Facts—Get Better Protection Send The Coupon Now

Only one shutdown, or one lost motor or one destroyed panel may cost you far more than replacing every fuse with a Fusetron.

Don't risk such losses—protect your production schedules by changing your entire electrical system to FUSETRONS.

BUSSMANN MFG. COMPANY, University at Jefferson St. Louis 7, Mo.
(Division McGraw Electric Co.)

FUSETRONS

SOLD THROUGH WHOLESALERS

BUSSMANN MFG. CO., University at Jefferson St. Louis 7, Mo. (Division McGraw Electric Co.)

Please send me complete facts about BUSS Fusetrons.

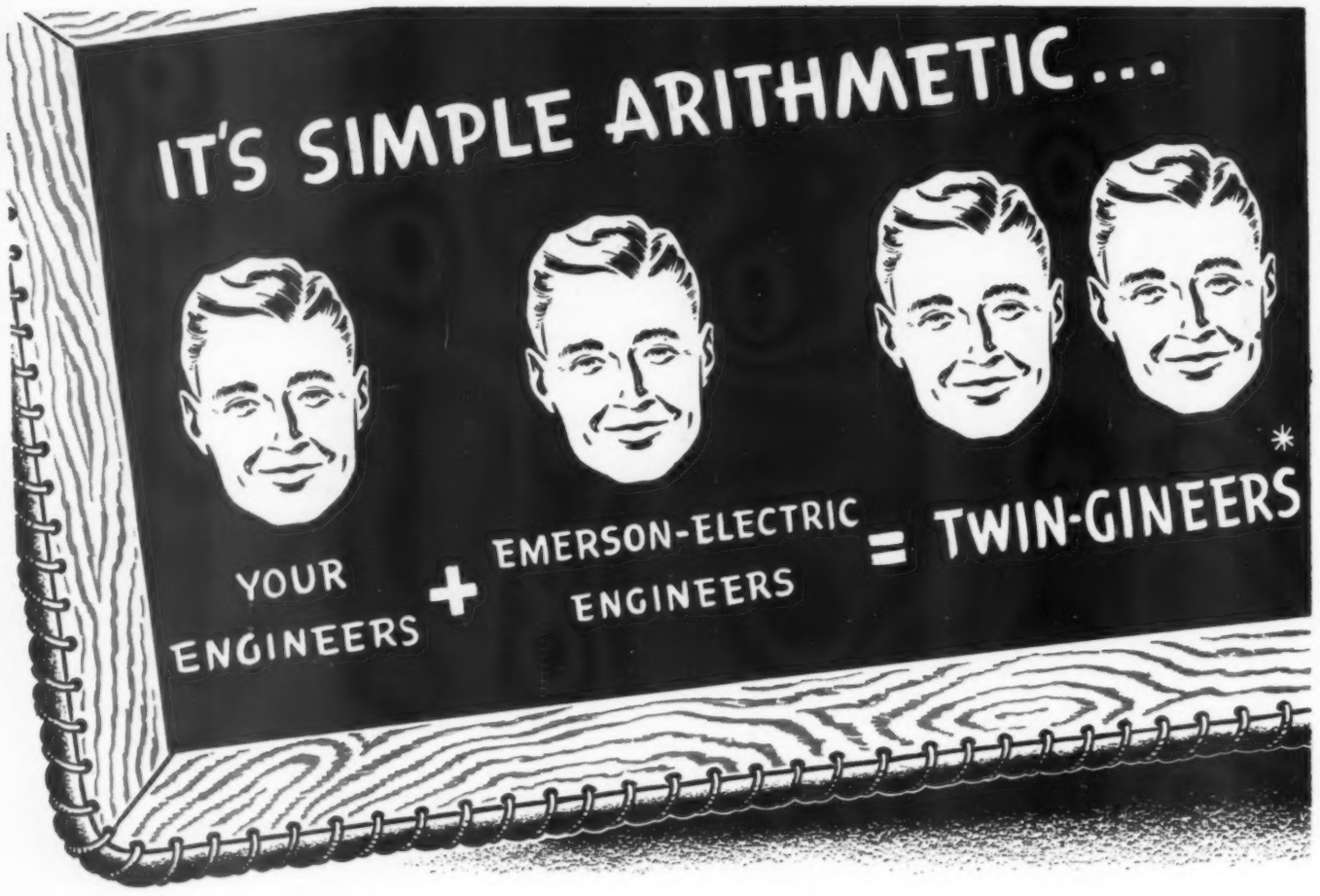
Name_____

Title_____

Company_____

Address_____

City_____ State_____ 747



TWO HEADS* are Better than ONE in designing new Motor-driven Appliances

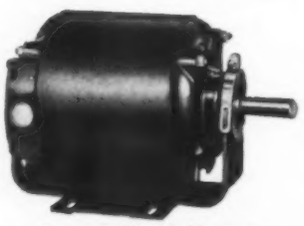
When Emerson-Electric Engineers work with your Design Engineers, to help improve your present motor-driven appliance, or to create an entirely new one, that's *addition!*

When such collaboration eliminates costly engineering back-tracking and results in money-saving short cuts, that's *subtraction!*

And, when your new product wins immediate success because of its many competitive advantages, resulting from co-design, that's *multiplication!*

Anyway you look at it, it's simple arithmetic. Two engineering heads—yours and Emerson-Electric's—are better than one! That's *"Twin-gineering."*

Although Emerson-Electric is presently booked solid on motor orders, our engineers have never been longer on ideas, experience and skill—and never more willing to share these advantages in suggesting more efficient motor applications for your future improved or new equipment. Your inquiry will be welcomed today!



Emerson-Electric Motors
1/20 to 5 H. P.—AC and DC

THE EMERSON ELECTRIC MFG. CO.
St. Louis 21, Mo.

Branches: New York • Chicago • Cincinnati
Detroit • Los Angeles • Davenport

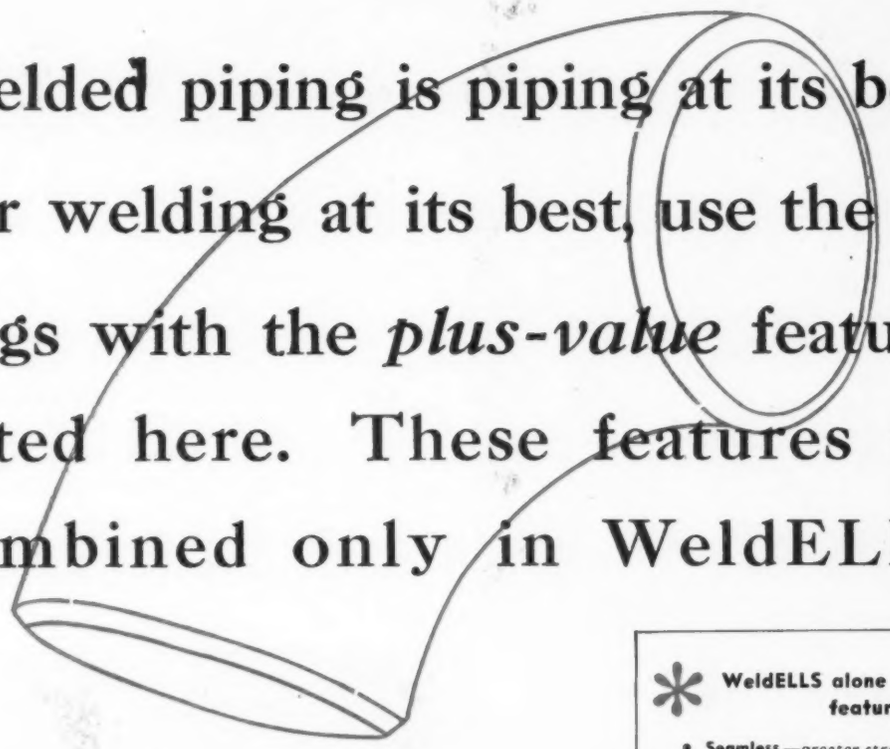
35

EMERSON ELECTRIC

MOTORS · FANS — APPLIANCES

WeldELLS *have everything**

Welded piping is piping at its best. For welding at its best, use the fittings with the *plus-value* features listed here. These features are combined only in WeldELLS.



TAYLOR FORGE & PIPE WORKS

General Offices & Works: P.O. Box 485, Chicago

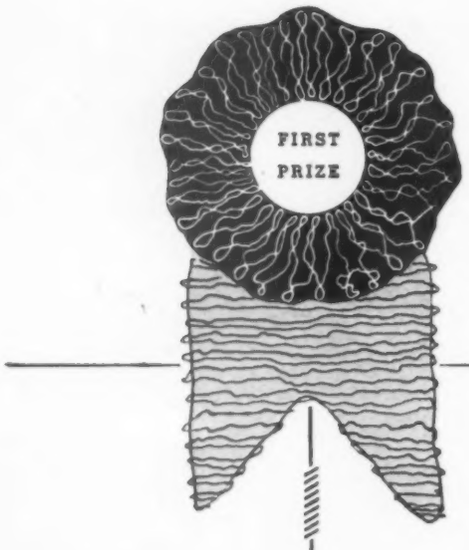
New York Office: 50 Church Street

Philadelphia Office: Broad Street Station Bldg.

Los Angeles Office: Subway Terminal Bldg.

* **WeldELLS alone combine these features:**

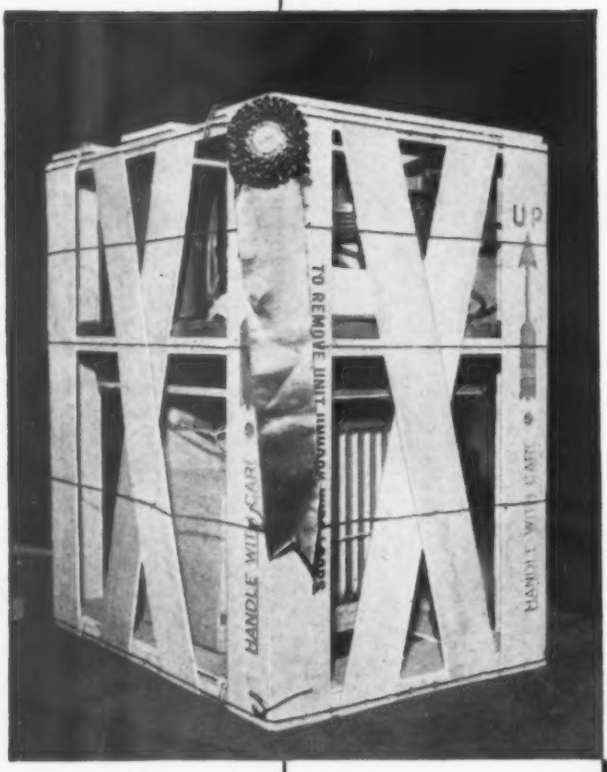
- **Seamless**—greater strength and uniformity.
- **Tangents**—keep weld away from zone of highest stress—simplify lining up.
- **Precision quarter-marked ends**—simplify layout and help insure accuracy.
- **Selective reinforcement**—provides uniform strength.
- **Permanent and complete identification markings**—saves time and eliminates errors in shop and field.
- **Wall thickness never less than specification minimum**—assures full strength and long life.
- **Machine tool beveled ends**—provides best welding surface and accurate bevel and land.
- **The most complete line of Welding Fittings and Forged Steel Flanges in the World**—insures complete service and undivided responsibility.



Top PRIZE WINNER

among all industrial containers

...WIREBOUNDS!



IPEAA JUDGES SELECT WIREBOUND CONDENSER CRATE

Yes!—Among shipping containers of all types entered in the Annual Protective Packaging Contest of the Industrial Packaging Engineers Association, a typical Wirebound was judged top of the field! Some of the features that brought Wirebound the blue ribbon were low initial cost, ease and economy of packing, lightness, strength and protection of contents, economy of shipping space, and reuseability.

The crate selected—built for Seeger Refrigerator Co. of Evansville, Indiana—weighs only 17 lbs. but has cut damage of the 85 lb. units to less than 1/10 of 1 percent! It comes in 3 parts—top, bottom and a 1 piece mat of 4 sides—fitted with inside cleats which carry the load. It can be packed by 1 man, can be stored 5 high and even permits testing of the unit without removal from the crate! Most important—it is typical of the results you can expect from Wirebounds specifically designed for your product. Write today for a free copy of "Your Product... How to Ship it Safely and at Lower Cost."

and that's not all...

Another Wirebound entry, a box for heavy knee-action units, received an honorable mention award for its user, Montgomery Ward & Co.

Wirebound
BOXES & CRATES

Wirebound Box Manufacturers Association
Room 1821, Borland Building, Chicago 3, Illinois

Borderline Vision*

may be fooling you!

● IT'S EASY TO BE FOOLED by lighting that's just a shade too dim. Borderline Vision takes an expert to spot. But just that hairline difference between good lighting and not-quite-good-enough makes a big difference in your production.

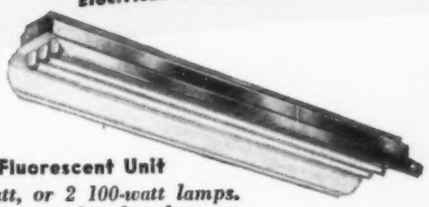
The best lighting today is a carefully engineered product—engineered to pay you dividends in increased, better work—better employee morale—and decreased manufacturing costs. Wheeler engineers have been paying these dividends to manufacturers ever since 1881 with Wheeler Skilled Lighting. Wheeler

Which side of this line are your workers?

Reflectors give maximum illumination from standard lamps because they *control* light. Their high reflection factor puts shadow-free light to work right on the job.

You'll see the real difference between good lighting and Borderline Vision in increased production when you start using Wheeler Skilled Lighting. Write **Wheeler Reflector Co., 275 Congress St., Boston 10, Mass.** Also New York and principal cities.

Distributed Exclusively Through Electrical Wholesalers



AH-Steel Fluorescent Unit

For 2 or 3 40-watt, or 2 100-watt lamps. Available with open or closed end porcelain enameled reflectors. Broad wiring channel with accessible enclosed ballast. For individual or continuous runs.

RLM Solid Neck Incandescent Reflector

Maximum lighting efficiency indoors or out. Expertly designed. Ruggedly built. Vitreous enamel only. 75 to 1500 watts.

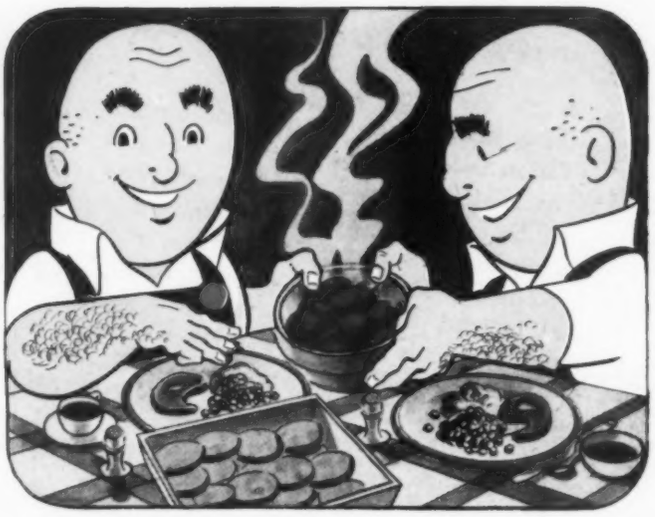
Wheeler REFLECTORS

SKILLED LIGHTING

MADE BY SPECIALISTS IN LIGHTING EQUIPMENT SINCE 1881

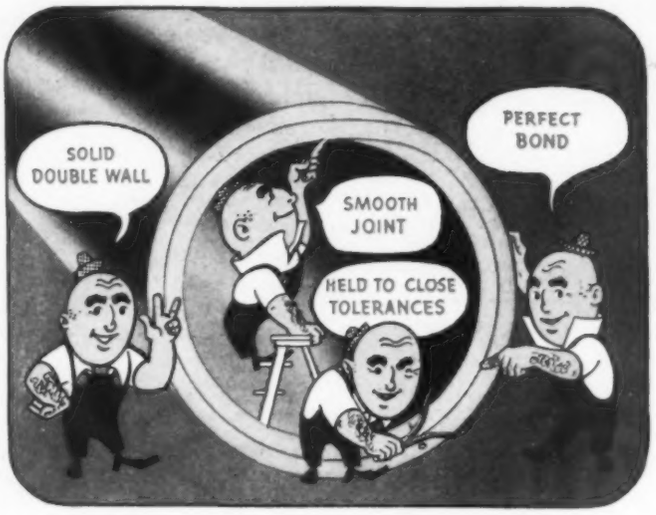
Your stomach can't tell winter from summer

1. **GARDEN-FRESH** peas and corn are tempting lures for many people, while others prefer juicy garden beets or tasty lima beans. Whatever the choice, they agree on this—the fresher, the better! Housewives today can answer this call, even in winter. But they need help to do it.



2. **SILENT PARTNER** in preserving summer freshness all year around is the modern freezer unit. At home or in the store, these units keep food so super-fresh, you can't tell by tasting whether it's winter or summer. But freezing units themselves need help to do this job well.

3. **BUNDYWELD** tubing in condenser and evaporator coils, compressor lines and connecting tubes helps bring dependability in freezer units. Bundyweld's many other uses include carrying fuel, oil, lubricants, vacuums and hydraulic fluids in motor vehicles and gas in modern ranges.



4. **BUNDYWELD** is different from other tubing. A single strip of basic metal, coated with a bonding metal, is rolled continuously twice laterally into tubular form, then metallurgically bonded by intense heat—carefully controlled—to form a solid, double wall tube, held to close dimensions.

5. **TAKE** the recommendation of many engineers and product designers who recognize the advantages of this unique, superior tubing. *Specify Bundyweld.* Let Bundy Research and Engineering Departments show the advantages of Bundy Tubing for your product. Available in steel, Monel and nickel. *Bundy Tubing Company, Detroit 14, Michigan.*

BUNDY TUBING

★ ★ ENGINEERED TO YOUR EXPECTATIONS ★ ★

BUNDY TUBING DISTRIBUTORS AND REPRESENTATIVES:

Pacific Metals Co., Ltd. 3100 19th St. San Francisco 10, Calif.	Standard Tube Sales Corp. 1 Admiral Ave. Maspeth, N.Y.C., N.Y.	Lapham-Hickey Co. 3333 W. 47th Place Chicago 32, Illinois	Rutan & Co. 404 Architects Bldg. Phila. 3, Pa.	Eagle Metals Co. 3628 E. Marginal Way Seattle 4, Wash.	Alloy Metal Sales Ltd. 861 Bay St. Toronto 5, Canada

Here's what you can do with this Blowpipe . . .

. . . and, by selecting from a choice of 57 different nozzles you can use the OXWELD C-32 to do almost any metal-cutting job practicable with manual equipment.

This sturdy cutting blowpipe is easy to handle and is built to give years of economical service even under the most strenuous conditions of use. A specially designed mixing chamber provides high flashback resistance. The C-32 operates on medium-pressure (5-15 lb. per sq. in.) acetylene.

Write for a catalog or ask Linde to demonstrate the advantages of this blowpipe.

The word "Oxweld" is a registered trade-mark of Union Carbide and Carbon Corporation.

THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

30 E. 42nd St., New York 17, N. Y. UCC Offices in Other Principal Cities

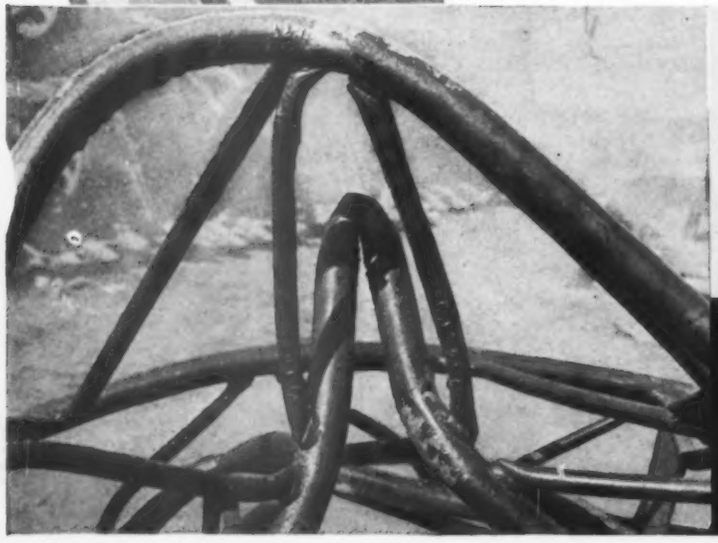
In Canada: Dominion Oxygen Company, Limited, Toronto

POOR FIT-UPS WELD LIKE GOOD FIT-UPS with P&H "PF"

Class AWS-ASTM E6012

No longer need poor fit-ups trouble you. "PF" — unique P&H Electrode — was developed especially for this work — to provide fast, sound welds where irregular joints cannot be avoided.

The secret of "PF's" advantage lies in its rapid solidifying action. Weld metal "sets up fast"— permitting the use of higher heats than with other electrodes of this classification. This means less bead crown, less finishing, also making it ideal for vertical and overhead work.



TESTED TO FAILURE....

NOT A SINGLE WELD LET LOOSE! Here's proof of the strong, sound welds "PF" makes possible. This framework of tubular members welded entirely with "PF" was overstressed to more than *three* times its rated capacity. When failure did occur, every *weld held!*

If poor fit-ups and faulty welds are slowing your production — you owe it to economy to try "PF." Your P&H representative has it. Call him today, or write for information.

P&H WELDING POSITIONERS

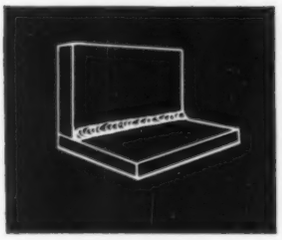
Put an end to rehandling — to slow, costly welding by keeping the work in downhand position — by permitting use of larger electrodes for faster deposition. Most P&H models available for immediate delivery. Write today.

WELDING POSITIONERS

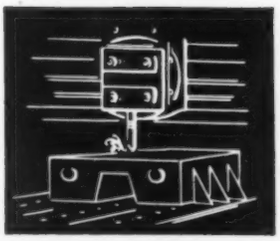
Specify "PF" FOR POOR FITS

Better Welds Where Fits Are Poor—Remember, "PF" means for "poor fits" — a job it excels at because it solidifies rapidly. "PF" is a mild steel electrode for *all*-purpose, *all*-position welding where deep penetration is not required.

Smooth Weld Deposits are important for better appearance of your products. It's what you get with this P&H Electrode — even where fit-ups are poor and welding normally difficult.



For Single Pass Welding — Designed for high welding currents, "PF" handles easily for all single pass work. Puts down smooth weld deposits for better appearance.



Fully Machinable — Rounding out its versatility, "PF" deposits can be machined as welded or heat treated. Try this unique production electrode today.

ALSO TRY THESE P&H ELECTRODES

"PF" is only one of many types of P&H Electrodes which meet every welding requirement. Here are just a few of the complete P&H mild steel group. Ask for complete line booklet, R-74.

- "SM" AWS E-6013
- "FR" AWS E-6012
- "FW"
- "AC-3" AWS E-6013
- "DH-2" AWS E-6020
- "AC-1" AWS E-6011
- "AP" AWS E-6010

P&H

WELDING ELECTRODES

4577 W. National Ave.
Milwaukee 14, Wisconsin

HARNISCHFEGER CORPORATION

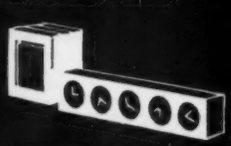
WELDING ELECTRODES · MOTORS · HOISTS · ELECTRIC CRANES · ARC WELDERS · EXCAVATORS

AMERICA'S MOST COMPLETE WELDING SERVICE

DC WELDERS

AC WELDERS

WELDING ELECTRODES



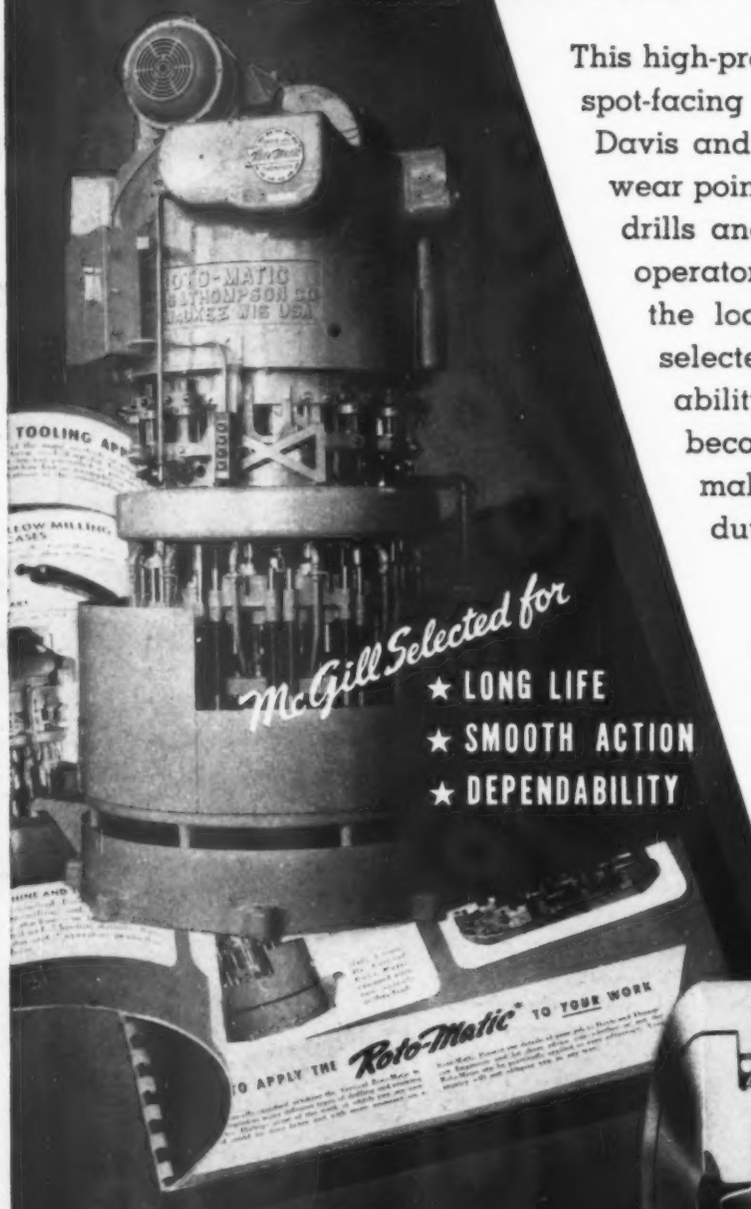
WELDING PRODUCTION CONTROL SYSTEMS

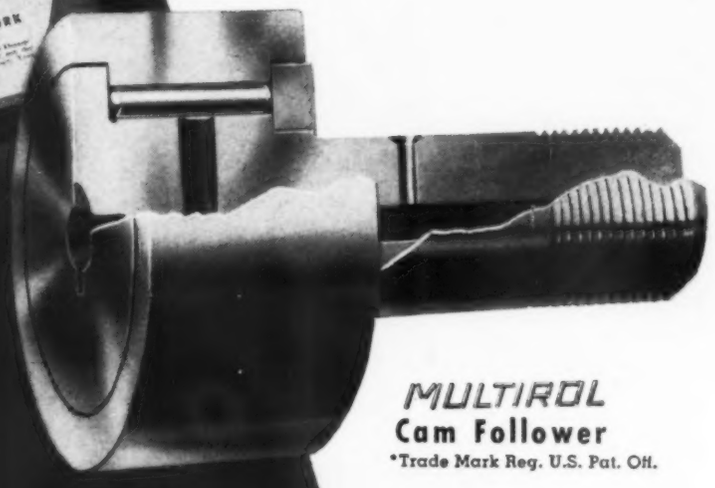
ELECTRIC HOISTS

24 McGILL MULTIROL* BEARINGS in this Vertical Drilling Machine

This high-production drilling, milling, reaming and spot-facing machine, the "Rotomatic" built by Davis and Thompson, is equipped at 24 critical wear points with McGill MULTIROL Bearings. The drills and work rotate continuously while the operator loads and unloads as the work passes the loading station. McGill bearings were selected because of their well-known dependability, their resistance to shock load, and because they offered advantages that make McGill the ideal bearing for heavy duty applications.

Whether you are designing machine tools or some other precision-built product you can depend on McGill Bearings to give you precision accuracy, adequate lubrication facilities, high load capacity for size and all the other essentials of better bearing performance.





MULTIROL Cam Follower

*Trade Mark Reg. U.S. Pat. Off.

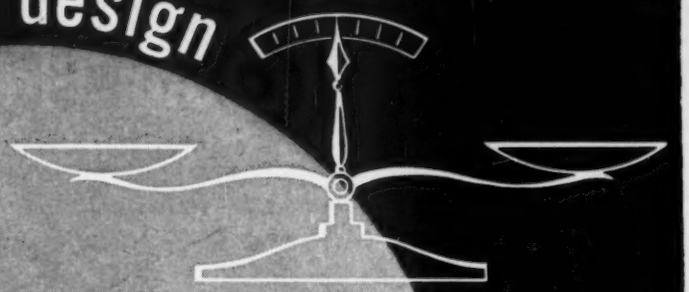
If you do not have Bulletin CF-40A send for your copy today. Where your application is special, McGill engineers will offer recommendations without obligation.

McGILL MANUFACTURING CO., INC. VALPARAISO, IND.

500 North Lafayette Street

MANUFACTURERS OF BALL AND ROLLER BEARINGS

a feature of Gaylord balanced design



Accurate fitting

Gaylord Boxes

To protect your product in handling from factory to user, perfect fit is essential. The product must be held snugly, and box parts join accurately.

Gaylord Boxes give added protection through closer tolerances in design and manufacture.

GAYLORD CONTAINER CORPORATION, General Offices: SAINT LOUIS

Corrugated and Solid Fibre Boxes • Folding Cartons
Kraft Grocery Bags and Sacks • Kraft Paper and Specialties

New York • Chicago • San Francisco • Atlanta • New Orleans Jersey City • Seattle • Indianapolis • Houston • Los Angeles Oakland • Minneapolis • Detroit • Jacksonville • Columbus • Fort Worth • Tampa • Cincinnati • Dallas • Des Moines • Oklahoma City • Greenville • Portland • St. Louis • San Antonio • Memphis Kansas City • Bogalusa • Milwaukee • Chattanooga • Weslaco New Haven • Appleton • Hickory • Greensboro • Sumter

125

STANDARD OF THE PACKAGING INDUSTRY

With Civilian Plane-Builders
AND OWNERS, TOO

...AMERICAN PHILLIPS SCREWS "Win Wings"
through High Style — Peak Performance — *Stratospheric Production Savings!

In Production: American Phillips Screws give you "air age" fastening — fast, fumble-proof, slip-proof, reject-proof. Both the work and worker are out of harm's way — driving is automatically straight. When these engineered screws "button up" your products, *time-savings soar *as high as 50%* — volume booms and your net looks nicer!

In Promotion: The decorative, straight-set, unburred head of the American Phillips Screw can't catch clothes or hose — but it *does* catch the eye! Customers know, too, that they're buying top serviceability — they can see it! And long life — they expect it! Join the many makers of appliances, cars, radios and other products who are cashing in on the *double advantages* (Production and Promotion), provided by American Phillips Screws.

4-WINGED DRIVER CAN'T SLIP OUT OF PHILLIPS TAPERED RECESS

AMERICAN SCREW COMPANY, PROVIDENCE 1, RHODE ISLAND
Chicago 11: 589 E. Illinois St. *Detroit 2:* 502 Stephenson Building

AMERICAN PHILLIPS *Screws*

ALL TYPES
ALL METALS: Steel, Brass, Bronze, Stainless Steel, Aluminum, Monel, Everdur (silicon bronze)

WHERE THERE'S A WILL
there's a way
TO CUT COSTS *with*

FORMETAL *Superformed* BUSHINGS AND BEARINGS

IF YOU ARE REALLY TRYING to cut costs and improve performance at the same time, specify FORMETAL. Through the exclusive qualities of these bushings and bearings, you can produce savings in materials and in operating costs.

For example, in a FORMETAL Bushing you can use a thinner wall to provide the same strength as the thick wall of an ordinary bushing. You can select a higher Rockwell hardness without loss of machinability. You can have a custom-made oil groove, vital to long, smooth performance, engineered to your particular need.

Yet with these and many other advantages, FORMETAL bushings and bearings, whether made of bronze, steel, or alloy to your specification, *cost you no more than ordinary types.* If you are an engineer or buyer of bushings, bearings, or spacer tubes, write for the free new catalog. You'll want it for constant reference!

To get your products really rolling . . . use FORMETAL!

NATIONAL FORMETAL CO., INC.
ESTABLISHED 1919
Manufacturers of "Superformed" Bushings and Bearings . . . and Spacer Tubes
6609 METTA AVENUE • CLEVELAND 14, OHIO
Offices in DETROIT • CHICAGO • NEW YORK • LOS ANGELES • INDIANAPOLIS

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National Formetal Co., Inc. 6609 Metta Ave., Cleveland 14, Ohio
Please send free copy of your new catalog.

NAME.....
COMPANY.....
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CITY and STATE.....

The SIDE of a V-BELT is the ONLY Part that Even Touches the Pulley Naturally, it GETS the WEAR!

Diagram of V-Belt in Sheave Groove

The moment you look at a V-belt in its sheave, you see that the *sides* are the only part that ever *touch* the pulley. The *sides* do all the *gripping*—they get *all the wear* against the sheave groove wall. The sides *pick up* the load. They transmit that load to the belt as a whole. And then, once more, the sides—and the sides alone—take hold of the driven pulley and deliver the power to it.

No wonder you have always noticed that the sidewall of the *ordinary* V-Belt is the part that *wears out first.*

Now See How the *Patented* CONCAVE SIDE *REDUCES Sidewall Wear— Lengthens Belt Life!

Clearly, since the sidewall is the part that wears out first, anything that prolongs the life of the sidewall will lengthen the life of the belt. The simple diagrams on the right show exactly why the ordinary, straight-sided V-Belt gets excessive wear along the *middle* of the sides. They show also why the Patented Concave Side greatly reduces sidewall wear in Gates Vulco Ropes. That is the simple reason why your Gates Vulco Ropes are giving you so much longer service than any straight-sided V-Belts can possibly give.

*More Important NOW That Gates SUPER V-Belts are Available

Now that Gates *SPECIALIZED* Research has resulted in Super V-Belts capable of carrying much heavier loads—up to 40% *higher horse-power ratings* in some cases—the sidewall of the belt is called upon to do even *more work* in transmitting these heavier loads to the pulley. Naturally, with heavier loading on the sidewall, the life-prolonging Concave Side is more important NOW than ever before!

THE GATES RUBBER COMPANY
DENVER, U. S. A.
"World's Largest Maker of V-Belts"

The CONCAVE SIDE is a GATES PATENT

Straight Sided V-Belt

How Straight Sided V-Belt Bulges When Bending Around Its Pulley

You can actually feel the bulging of a straight-sided V-Belt by holding the sides between your finger and thumb and then bending the belt. Naturally, this bulging produces excessive wear along the middle of the sidewall as indicated by arrows.

Gates V-Belt with Patented Concave Sidewall

Showing How Concave Side of Gates V-Belt Straightens to Make Perfect Fit in Sheave Groove When Belt Is Bending Over Pulley.

No Bulging against the sides of the sheave groove means that sidewall wear is evenly distributed over the full width of the sidewall—and that means much longer life for the belt.

477

GATES VULCO ROPE DRIVES
Engineering Offices and Jobber Stocks **IN ALL INDUSTRIAL CENTERS** of the U. S. and 71 Foreign Countries

Gates
THE MARK OF SPECIALIZED RESEARCH

THERE'S LASTING STRENGTH *in this Aristocrat of Chairs*

Here's a chair that can "take it". Rocked back and dropped forward 4½" mechanically 100,000 times with a 200 lb. weight on its seat, the chair stayed tight and unchanged dimensionally. Made of high yield strength extruded aluminum alloy, this Wear-Ever Aluminum Chair levels itself on uneven floors.

WEAR-ABILITY — The silvery Alumilite finish won't corrode, chip, crack, peel or show finger marks. Heat, cold, dryness or dampness do not affect it. No splinters to snag nylons. The tough, washable upholstery fabric won't fade.

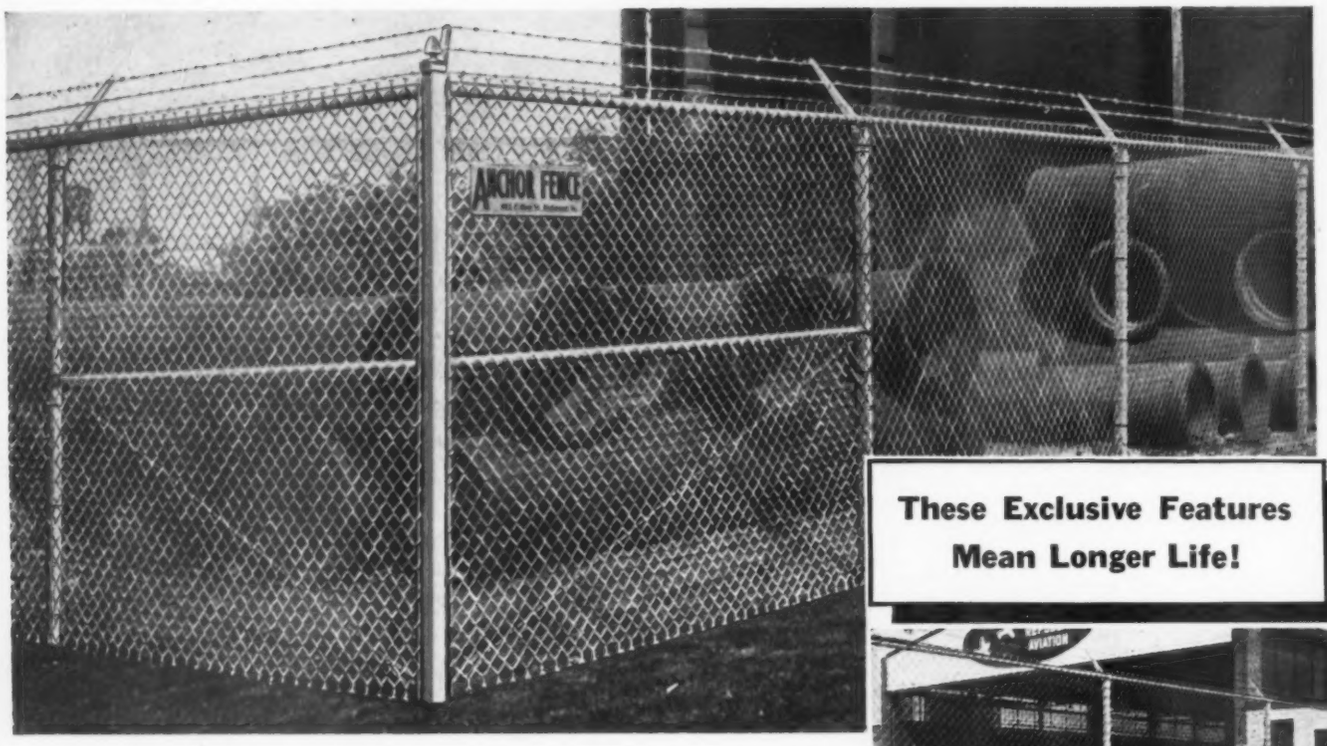
BEAUTIFUL anywhere it's used. Ornamented with black plastic finials and equipped with non-marring leg glides. Available in rich upholstery colors: Red, Green, Blue, Ivory, Dark Green and Dark Brown.

COMFORTABLE—Has large shaped seat and back, posture-correct design. Test its comfort—try one of these chairs.

ASK YOUR SUPPLY HOUSE to show you this economical Wear-Ever Aluminum Chair. Or, mail the coupon to The Aluminum Cooking Utensil Company, 4107 Wear-Ever Building, New Kensington, Pennsylvania.

WEAR·EVER *Aluminum Chairs*

We would like to see the new Wear-Ever Aluminum Chair:
Color..... Also price on (Quantity)....
Name.....Title.....
Firm.....
Address.....
City.....Zone.....State.....



How to PROTECT OUTDOOR STORAGE OF MATERIALS, SUPPLIES!

You can make full use of your outdoor space . . . for storing materials and supplies . . . when your property is fully protected by an Anchor Chain Link Fence. That means you'll be able to free valuable factory floor space for production without building at this time. What's more, an Anchor Fence will also control employees and motor traffic in and out of your plant—keep out trespassers, agitators and other trouble-makers.

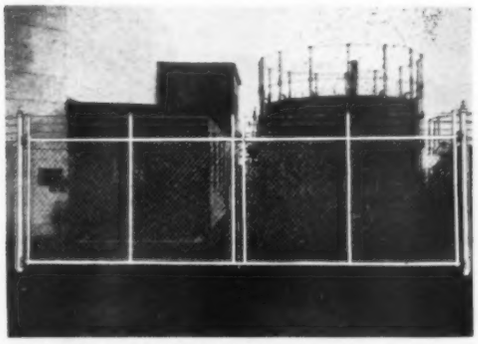
Write today for your free copy of our Book No. 110 . . . showing types of fence, construction details, photographs of prominent industrial installations. Or let us have one of our experienced engineers call and give you the benefit of his knowledge in solving protection problems. Address: ANCHOR POST FENCE DIVISION, Anchor Post Products, Inc., 6615 Eastern Ave., Baltimore 24, Maryland.

Anchor Fence

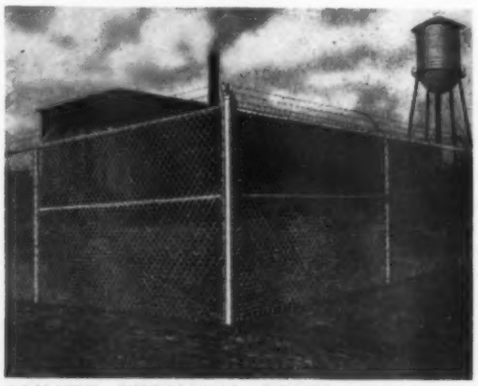
Nation-wide Sales and Erecting Service

These Exclusive Features Mean Longer Life!

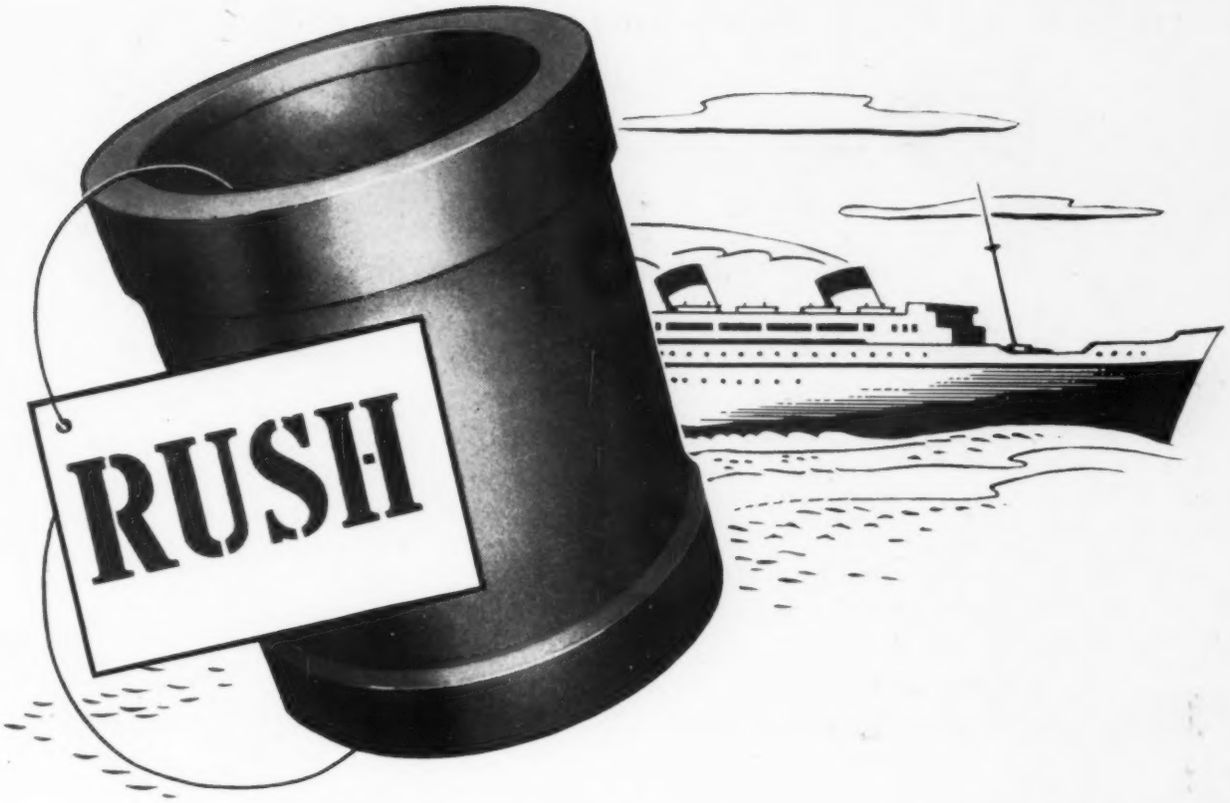
DEEP-DRIVEN ANCHORS are clamped to the posts at right angles to the fence line—form a 3-point "tree-root" anchorage deep in the sub-soil.



SQUARE FRAME GATES of square steel tubing. Anchor gates are butt-welded at corners to prevent sagging and warping.



SQUARE TERMINAL POSTS are stronger than round posts of comparable size. Cross-bracing to adjoining line posts adds extra rigidity.



N·B·M EIGHT-DAY BRONZE CASTING SAVES CRIPPLED STEAMSHIP

The sailing of a steamer from Mobile, Ala., was recently delayed because a new bronze pump liner was needed.

The steamship line called us Friday. Our pattern shop swung into immediate action. The core box was delivered Monday, the pattern Tuesday. On Friday, the 1940 lbs. casting was shipped . . . an eight-day wonder casting.

We wouldn't care for rush work every day . . . but if you are in an emergency, we'll be glad to help out.

N·B·M BRONZE CASTINGS
We put more service into them—
you get more service out of them

NBM

AMERICAN BRAKE SHOE COMPANY

Brake Shoe

NATIONAL BEARING DIVISION
ST. LOUIS • NEW YORK

PLANTS IN: ST. LOUIS, MO. • PITTSBURGH, PA. • MEADVILLE, PA. • JERSEY CITY, N. J. • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.

CHECK LIST FOR CUTTING COSTS WITH

ROCKRITE

CLOSE TOLERANCE TUBING

The greater dimensional accuracy of Rockrite Tubing has upset previous methods of calculating costs in the production of cylindrical and ring-shaped parts. The new economies possible with Rockrite Tubing make it worth while to reanalyze and revise old cost studies.

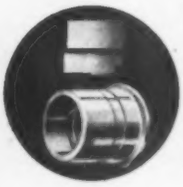
This check list will help you to visualize the cost-saving advantages of using Rockrite Tubing instead of commercial cold-drawn tubing, bar stock or forgings.

LESS MACHINING TIME . . . less metal to remove in order to meet dimensional requirements. In many cases reaming and finishing are unnecessary.

ELIMINATES BORING . . . controlled-bore Rockrite Tubing often makes boring unnecessary.

HIGHER MACHINING SPEEDS . . . greater concentricity and closer diameter-tolerances permit using faster cutting speeds.

LONGER TOOL LIFE . . . light cuts of uniform depth slash tool maintenence, even at high cutting speeds.



FORMING TOOLS PRACTICAL . . . light, even cuts make practical the use of forming tools for surface turning.

HIGHER PHYSICALS . . . combination of compression and extrusion in the Rockrite Process sizes the tube without stressing the metal . . . heat-treatment of parts is sometimes unnecessary for improved physicals.

AVAILABLE IN MANY TYPES AND METALS . . . heavy-wall, bi-metal, tapered, and long-piece tubing in many grades and analyses of steel and other metals including some that are difficult or impossible to cold-draw to size.

Send for the Rockrite 20-page Bulletin . . . it provides a non-technical explanation of the economies possible with Rockrite Tubing, and technical data which will be of particular interest to your engineers. Write today.

TUBE REDUCING CORPORATION

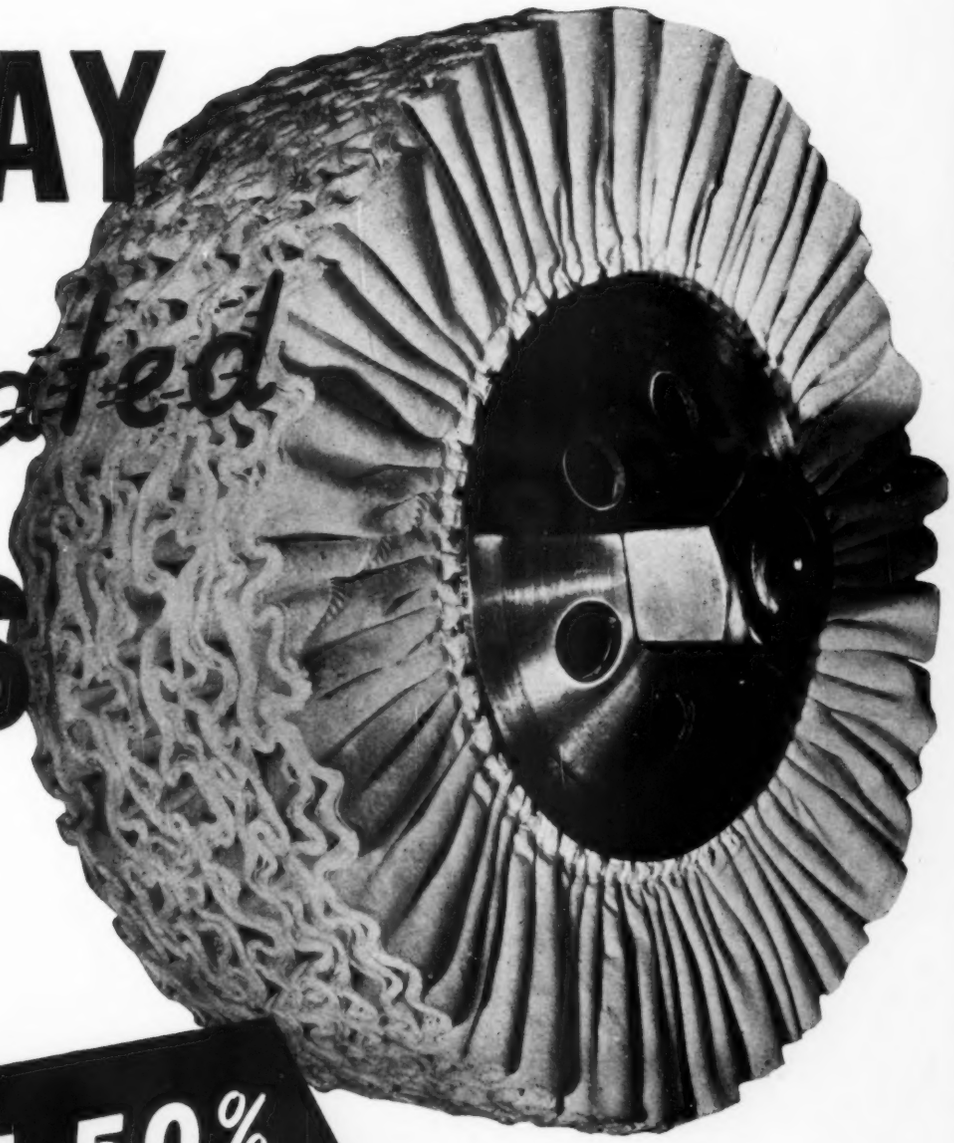
WALLINGTON
NEW JERSEY

TR-107

NO MORE COMPROMISING WITH SUBSTITUTE BUFFS!

YOU CAN NOW HAVE

AIRWAY *Ventilated* BUFFS



SAVE 50%
ON YOUR COTTON BUFF WHEEL COSTS

JACKSON BUFF CORPORATION
21-03 41st Ave. • L. I. C. N. Y.

an open letter to BUFF BUYERS—

JACKSON BUFF CORPORATION
21-03 FORTY-FIRST AVENUE
LONG ISLAND CITY 1, N. Y.

OFFICE OF THE PRESIDENT

To the Consumer of Cotton Buffs:

During the past year many buyers of buffs bought whatever was available regardless of quality to try to keep going. Buffs of inferior quality were substituted for Airway Ventilated Buffs.

We are glad to advise the expansion of our plant and the increase in our production makes available the Airway Ventilated Buff. No longer do you have to substitute inferior quality. You can save 50% of your buff wheel costs by using the Airway Ventilated Buff which is now available to take care of your requirements.

We most certainly never reduced the quality of the Airway Ventilated Buff and therefore today there is a greater demand than ever for our buff which really does the job and does it economically.

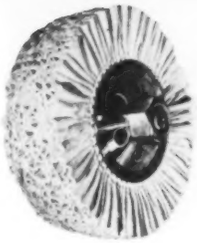
We are at your service and solicit your business.

Yours very truly,

JACKSON BUFF CORPORATION

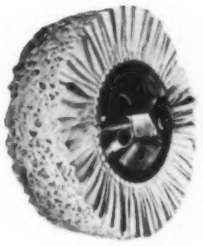
L. W. Mac Farland

L.W. MAC FARLAND
President



AIRWAY *Ventilated* BUFFS —improved and perfected, do better work faster and wear twice as long.

AIRWAY *Ventilated* BUFFS are constructed in many different types for all purposes. A wheel for every requirement designed for low-cost production.



IN YOUR PLANS FOR THE FUTURE — bear in mind . . .

1 **AIRWAY *Ventilated* BUFFS will be available in greater quantities**

2 **AIRWAY *Ventilated* BUFFS cost half as much — wear twice as long**

IMPORTANT FEATURES OF AIRWAY *Ventilated* BUFFS

- Eliminates burning
- Raveling eliminated, requires no raking
- Saves compound
- Faster cutting, and does not ridge work

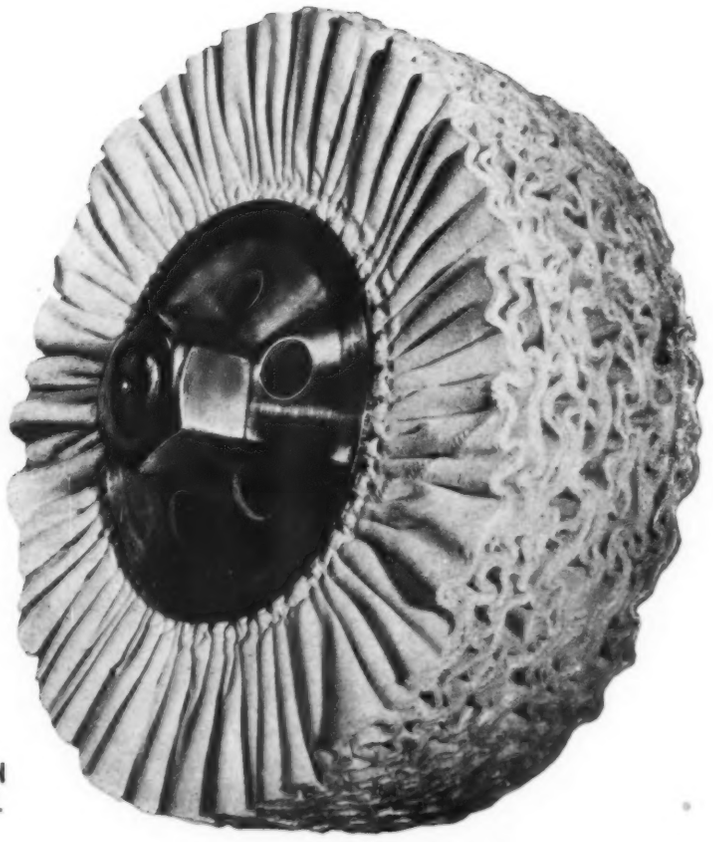
WARNING NOTICE

Jackson Buff Corporation of Long Island City, New York, has rights to U. S. Patents Nos. Re 19,894 and 2,140,208 which have broad claims covering an air cooled buff having means for the admission of air through the sides of the buff. Owner intends to protect all rights and stop infringement.

JACKSON BUFF CORPORATION

21-03 41st AVENUE • LONG ISLAND CITY 1, NEW YORK, N. Y.

AIRWAY *Ventilated* BUFFS ALWAYS HAVE AND ALWAYS WILL

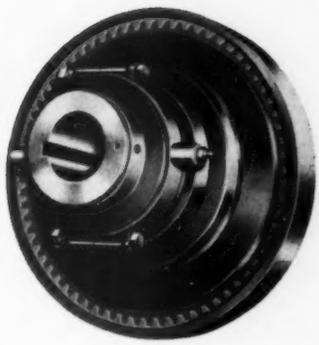


JACKSON BUFF CORPORATION
21-03 41st Ave. • L. I. C. N. Y.

SAVE YOU 50%

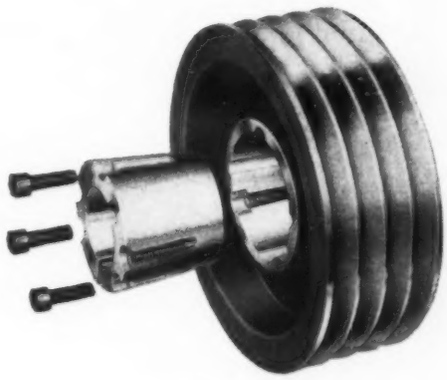
This is the BRONZOIL Bearing. Developed by Dodge for fan and blower service. A new and better transmission appliance.

U. S. Patent No. 1,931,055



This is the ROLLING GRIP Clutch. Developed by Dodge. No toggles. A new and better transmission appliance.

U. S. Patent No. 2,397,414



This is the TAPER-LOCK Sheave. Developed by Dodge. No flange. No collar. A new and better transmission appliance.

U. S. Patent No. 2,402,743

This is the Dodge Transmissioneer – who will tell you about new ways of transmitting power mechanically.

DODGE

of Mishawaka, Ind.

New equipment which helps cut costs, improve machine performance, increase production is offered to you by Dodge of Mishawaka. For detailed information about power transmission units to meet specific needs in your plant, or on your product, call the Transmissioneer, your local Dodge distributor. Look for his name in the classified telephone directory under "Power Transmission Equipment." A talk with him will prove profitable to you.

DODGE MANUFACTURING CORP., MISHAWAKA, IND.

Copyright, 1947, Dodge Mfg. Corp.

NAME PLATES

FOR YOUR NAME PLATE REQUIREMENTS, WRITE OUR SUBSIDIARY, ETCHING COMPANY OF AMERICA, 1520 MONTANA STREET, CHICAGO 14, ILLINOIS

CHASE
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have these
Miscellaneous
items in stock
BRASS AND BRONZE COTTER PINS
COPPER HAMMERS
BRASS NUMBERING CHECKS
BEARING BRONZE
BRONZE SASH CHAIN
COPPER AND BRASS TACKS
COPPER WIRE NAILS
CUT, CLOUT AND SHEATHING COPPER NAILS
BRASS AND NICKEL-PLATED ESCUTCHEON PINS
SOLDERING COPPERS
SILVER SOLDER STRIP AND WIRE IN COILS
COPPER AND BRASS WIRE CLOTH
COPPER RIVETS AND BURS
BRASS, COPPER AND SILICON BRONZE WASHERS, BURS, LOCK WASHERS
AUTOMOTIVE, REFRIGERATION AND OIL BURNER FITTINGS
BRASS LAG, CAP, MACHINE AND WOOD SCREWS
BRASS AND BRONZE NUTS AND BOLTS
COPPER SHOT FOR ALLOYING

PERHAPS you didn't know that for miscellaneous items, too, all you have to do is call Chase.

Brass washers, or welding rods, brass and copper rivets, or tacks . . . such things as these are carried in stock at Chase warehouses. If your local Chase warehouse hasn't what you want in stock they can get it for you from one of 20 Chase warehouses.

Remember— CHASE SERVICE IS AS CLOSE AS YOUR PHONE

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the Nation's Headquarters for
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THIS IS THE CHASE NETWORK . . . *handiest way to buy brass*

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A BUYING GUIDE FOR ABRASIVES

POINT No. 6

LOCAL DISTRIBUTOR SERVICE

With progressive purchasing methods dictating improved efficiency of supply, the services of your CARBORUNDUM distributor assume increased importance. Prompt delivery of standard wheels, coated abrasives, sticks and stones, and grains by CARBORUNDUM is assured from large and varied stocks conveniently located nearby. Factory inventories of these items can be safely and economically reduced. More efficient use of abrasives is promoted through a local staff, trained by CARBORUNDUM, and familiar with varied applications. They are informed on latest developments and have access to CARBORUNDUM representatives when the problem is too difficult or unusual. Intelligent handling and efficient office routine is also pointed to by some customers who prefer the personal consideration and attention rendered by these modern distribution units. These services account in part for the increasing preference for products by CARBORUNDUM. The Carborundum Company, Niagara Falls, New York.

Good Rule for Good Grinding . . . CALL IN

CARBORUNDUM

TRADE MARK

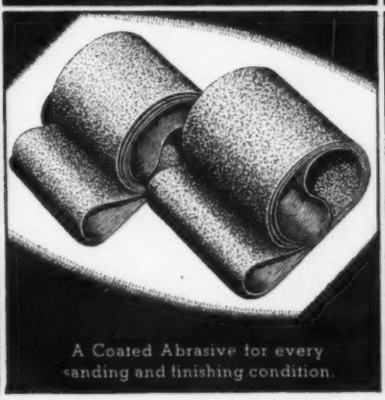
BONDED ABRASIVES
COATED ABRASIVES
ABRASIVE GRAINS AND FINISHING COMPOUNDS

Tool Room sticks and stones that cut fast . . last long . . and hold their form

Mounted wheels, in all standard grits and grades, for portable grinding equipment

"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company

Cutting-Off Wheels . . the modern tool for faster, less costly, more finished cuts



A Coated Abrasive for every sanding and finishing condition

All standard shapes are supplied in grinding wheels by CARBORUNDUM

THE LOW COST PACKAGE with the *Luxury Look*

Food in Deltaseal Bags stays pure. For this rich-looking, modern package protects against sifting and contamination... guards the quality of your foods right into the home. Because all of the sides are flat, Deltaseal Bags stack compactly... no wasted space in storage or transit. Furthermore, with your brand printed in a colorful, eye-catching design, Deltaseal Bags make attractive, sales-building displays.

Ask your Bemis representative about the economy of Deltaseal Bags and the Deltaseal Packaging System.

BEMIS BRO. BAG CO.

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Charlotte • Chicago • Denver • Detroit • Houston
East Pepperell • Indianapolis • Kansas City • Louisville
Los Angeles • Memphis • Minneapolis • New Orleans
Mobile • New York City • Norfolk • Oklahoma City
Omaha • Orlando • Peoria • Pittsburgh • St. Louis
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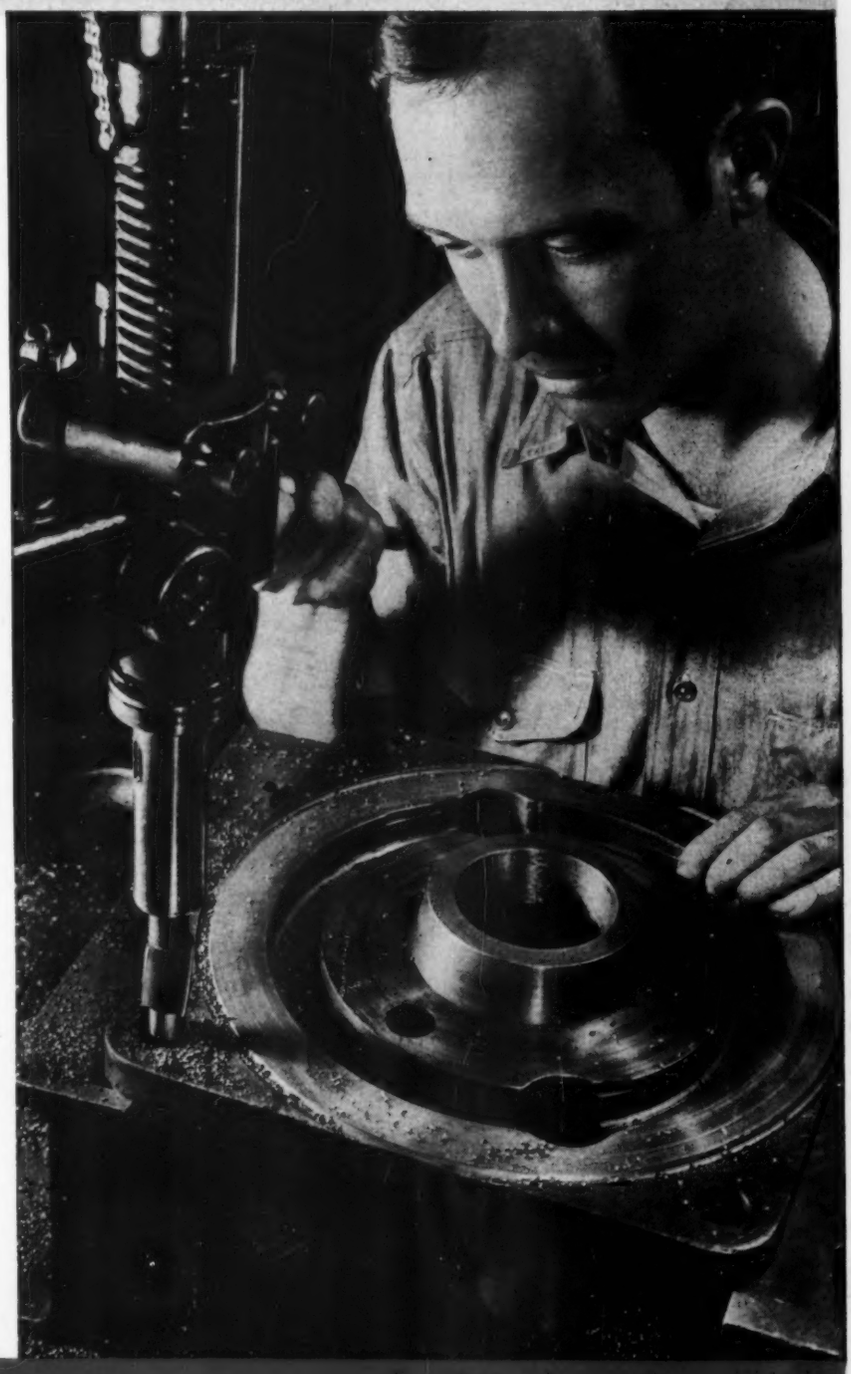
San Francisco • Wichita • Wilmington, California

BEMIS *Deltaseal* BAGS

Available in 5-lb., 10-lb. and 25-lb. sizes. Also in smaller sizes down to 2 lbs.

Check These Advantages of CLEVELAND HIGH SPEED COUNTERBORES AND SPOT FACERS



✓ RIGID AND STRONG

The counterbore and spot facer being integral with the shank and the shank being a standard taper, permits the tool to be used directly in the machine spindle, eliminating all holders and adapters.

✓ SIMPLE IN DESIGN

Made of the best grade of High Speed Steel, with no unnecessary or easily mislaid parts.

✓ EXTRA LONG FLUTES

The flutes are extra long, which gives extended life for regrinding and permits the counterboring and spot facing of parts which cannot be reached with a short tool.

✓ TOOL STEEL PILOTS

Pilots are made of the best grade of Carbon Tool Steel, properly heat-treated and ground. They are simple in design, having a straight shank with a flat for the set screw.

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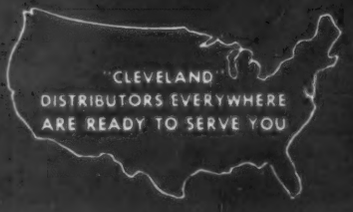


GET TO THE POINT

WITH AMSCO-NAGLE INDUSTRIAL PUMPS

AMSCO-NAGLE PUMPS GIVE GREATER SERVICE

Amsco design covers the two points that really determine the value of an industrial pump: (1) The service it will give and (2) The ease with which it can be maintained . . . any pump, worthy of the name, will handle the actual pumping.

Every feature of Amsco-Nagle Pumps is designed to resist abrasion and impact. Wide impeller clearances allow free passage of debris-laden liquids. Casing, impeller, and end plate are only parts contacting material being pumped—bearing housing is completely sealed off from water end. Anti-friction bearings are arranged to handle heavy loads. An example of Amsco's striving for the utmost in durability is the use of manganese steel, "the toughest steel known", for shells, impellers, sideplates and liners.

Figure 1—Clamping ring holds end plate.

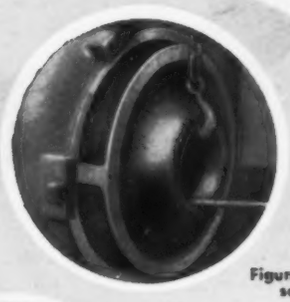


Figure 2—Impeller screws off.

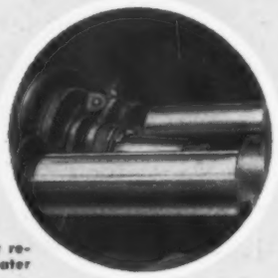


Figure 3—Easy removal of water end.

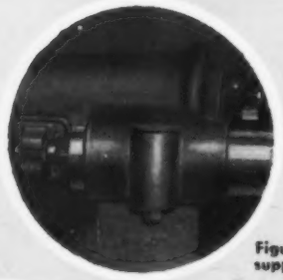
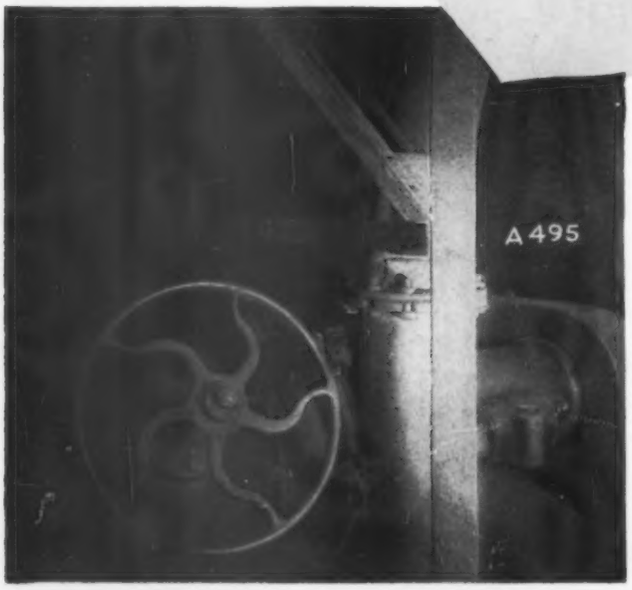


Figure 4—Tubular supports clamp in housing.

Figure 5—Accessible stuffing box.



AMSCO-NAGLE PUMPS ARE EASIER TO MAINTAIN

Water end parts subjected to wear can be adjusted or replaced easily and quickly. End plate comes off by simply removing clamping ring (clamping dogs on some models) — see Figure 1. Impeller screws off — see Figure 2. Or entire water end can be removed —see Figure 3. Tubes on casing clamp in bearing housing as shown in Figure 4— horizontal jack screw adjustment before tightening clamp bolts assures positive alignment of impeller in casing. Stuffing box readily accessible between tubes — see Figure 5.

Write for Bulletin describing these pumps.

Typical power plant installation of an Amsco-Nagle, 6", Type "T", Ash Handling Pump.

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS, ILL.

Foundries at Chicago Heights, Ill., New Castle, Del., Denver, Colo., Oakland, Calif., Los Angeles, Calif., St. Louis, Mo.
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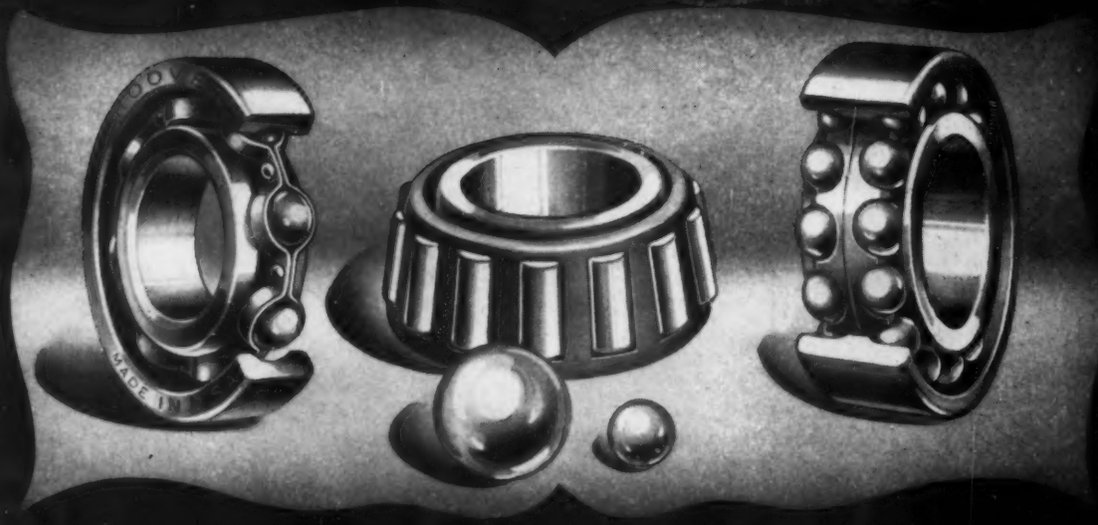
The Aristocrat of *Bearings*

FOR THOSE WHO CAN AFFORD

AND REQUIRE

THE *Better* THINGS OF LIFE



HOOVER

The World's Only Ball Bearing with Honed Raceways

HOOVER BALL AND BEARING COMPANY -- ANN ARBOR, MICHIGAN

*Authentic illustration from photo of "The Lincoln Room," Wills House, a national shrine at Gettysburg. Here Lincoln finished the "Address" which was delivered the next day, November 19, 1863.

16 Years Before the Gettysburg Address*... CHASE was manufacturing Better Bags

"Four score and seven years ago . . ." The Great Emancipator scans it thoughtfully, perhaps skeptically . . . little dreaming that one of the world's most sublime documents is being born.

During this crucial period and years *before,* Chase was manufacturing bags for the storage and shipment of military supplies, seed, equipment and feed—for many uses and frontiers.

And today, Chase is celebrating its Centennial—one hundred years of *experience* in the bag business. We believe that this is important to you because it is your assurance that whatever your bag requirements may be, you can *count* on *Chase* for improved containers for your products.

You'll find your nearby Chase salesman thoroughly informed—and glad to aid you in the solution of your packing problems.

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F.O.B. Philosophy of Buying

ENTERING the third quarter of 1947, a good many of the business prognosticators, both amateur and professional, and those of both the optimistic and the pessimistic school, have their fingers crossed. For on one point they have been pretty well in agreement, that this third quarter will be the period of decision, and October 1st should give us the answers. If prices are going to level out on a sound and stable basis or drift or dive to a lower plane, if supplies of copper and lead are going to come into reasonable balance with demand, if business is going into a depression of any considerable magnitude or duration, if the public is going to start buying again and set in motion the long deferred postwar boom, these developments must evidence themselves within the next several weeks to meet the schedule of the forecasters. October 1 seemed a long way off when the forecasts for the year were being made, but the clock has been steadily ticking on for six months toward the promised day.

• •

ONE FEATURE of the present situation that has impressed most observers—it has kept purchasing agents on the edge of their chairs and it may still save the reputation of jittery forecasters whose earlier prophecies have not yet come to pass—is the dramatic suddenness of market changes. The furniture industry, we are told, went from record breaking backlogs to wholesale cancellations within a period of 48 hours. Boy Scout waste paper drives took a beating recently when prices dropped 50% overnight in some areas. The directors of one brass goods company spent one meeting this spring trying to devise ways and means of increasing output to fill orders, and 30 days later curtailed all operations by 25%. After waiting more than a year without any encouragement, an Ohio purchasing agent was surprised to get delivery of materials handling equipment five months ahead of the promise, and the following day the salesman called offering to duplicate the order on a four-month schedule. The moral, if any, is that *anything* can happen. As every purchasing agent knows, there are still plenty of items on the critical list. But don't be surprised to see any one of these markets go into reverse on short notice.

• •

NEWBURYPORT's experiment with price reduction at the retail level brought to light one unforeseen hurdle, which may or may not be of an economic nature, but is nevertheless a potent factor. This is the reaction of manufacturers and suppliers who market their products with the protection of various retail-price-maintenance laws, and who promptly instructed the dealers to restore the "suggested resale prices" or look for new sources of supply. It appears that President Truman is not the only one who must be cooperated with if this plan is to make any headway.

• •

THE LEFT HAND doesn't always know what the right hand is doing, or at least doesn't pay much attention. Or, to vary the anatomical simile, it's quite possible to talk with the tongue in both cheeks. On the very day that the *Journal of Commerce* headlined "Business Girds to Fight Huge Relief Spending", we were conning with much interest a report on the intensive pressure being placed upon government procurement officers to buy large quantities of shoes, radios, and other assorted merchandise calculated to raise the standards of living in Greece.

• •

WE HAVE never advocated the seven-day week for purchasing agents, and don't propose to go on record with such a recommendation now. But propronents of the idea may find a supporting argument in the recent experience of P. A. William Hanlon of the Benedict Mfg. Co., East Syracuse, N. Y. Mr. Hanlon was doing some

Sunday work at the plant when a severe electrical storm came up, and a well aimed bolt of lightning started a brisk fire in the greasing and buffing compounds in the buffing room. Prompt action by the alert P. A. in getting the fire department to the scene was instrumental in bringing the blaze under control and holding the damage to a minimum. Of course in these days of continuing shortages, a purchasing agent would do almost anything to protect his precious inventory.

• •

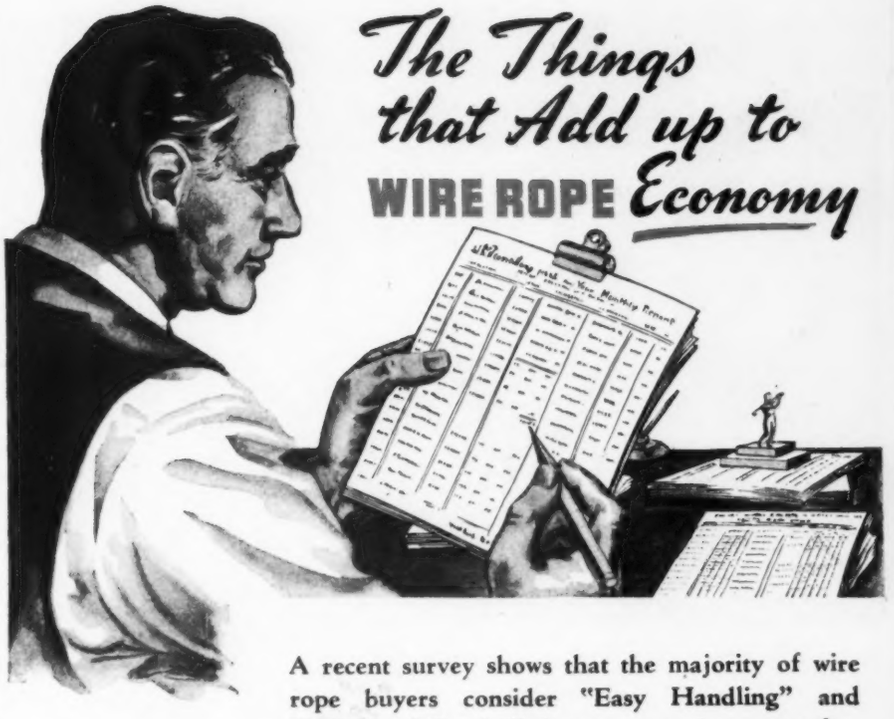
IT'S GETTING to the point where a business man can't trust the standard indicators he has been accustomed to use in interpreting conditions and trends. The Department of Commerce is even now engaged in a sweeping revision of its two most important indicators, the statistical series on gross national product and national income. Starting with the report on the second quarter of 1947, some of the items now included in the index will be dropped, others added, and the basis of calculation changed. We are assured that this is all in the interest of greater accuracy and usefulness, and the figures will be worked back to 1929 for comparison, but you may not recognize the picture on which business policies and decisions have been predicated for some years past.

• •

PRICE SENSATION of the month was the rumor that a new Ford car could be procured for 1 cent in cash—provided that the cent was a copper penny minted in 1943. As thousands of people engaged in the search for such a coin and flooded Ford offices and dealers with inquiries, the company hastened to deny the offer officially, protesting complete ignorance of how, when and where the rumor started. Even more conclusive is the statement of Mrs. Nellie Taylor Ross, Director of the U. S. Mint. According to Mrs. Ross, and she ought to know, there is no such thing as a legitimate copper penny with a 1943 date.

• •

MARKETING surveys indicate that the new competition has revived the art of "doorbell" selling on a large scale. Fred C. Wolfe, New York regional sales manager of the Fuller Brush Company, was interviewed as an expert in this field. His laconic comment: "Why not?"

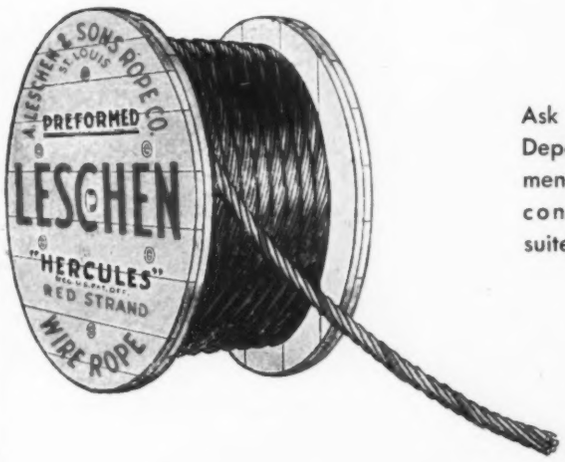


The Things that Add up to WIRE ROPE *Economy*

A recent survey shows that the majority of wire rope buyers consider "Easy Handling" and "Length of Service" the two most important factors in determining final rope cost.

And more and more wire rope users are finding, by actual experience, that they can depend on Preformed "HERCULES" (Red-Strand) Wire Rope for these two top-ranking features. As it is available in a wide range of constructions — both Round Strand and Flattened Strand — they have *also* found that in "HERCULES" there is a *right rope* for any heavy duty purpose.

If you have not tried Preformed "HERCULES" (Red-Strand) Wire Rope you, too, would like its easy handling, smooth spooling and long life. Give it a chance to *prove* its money saving ability!
We invite your inquiries.



Ask our Engineering Department to recommend the type and construction best suited to your needs.

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Your brass, aluminum and other non-ferrous metal parts may be costing you more than they should or may be ready for a quality-lifting improvement in design. In either case, it costs you nothing to investigate Scovill's long experience in forging and the superior facilities at your service.

GET THE FACTS

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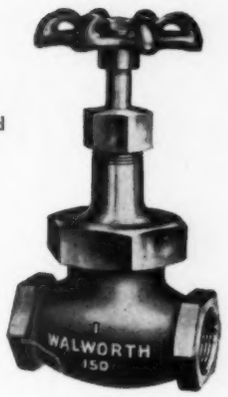
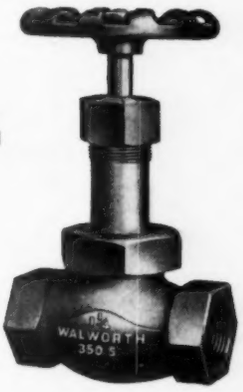
Bronze
Valve



Renewable Disc

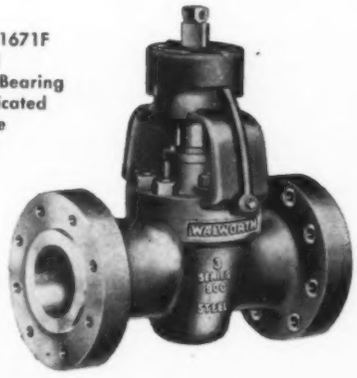
No. 225P
350-Pound
Bronze
Valve



"500 Brinell" Seat & Disc

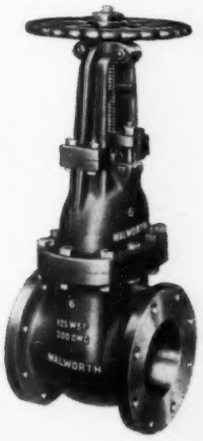
No. 709
Iron Body
Saddle
Gate
Valve

No. 1671F
Steel
Ball Bearing
Lubricated
Valve
Plug



Pressure-
Seal
Steel
Valve

No. 726F
Iron Body
Wedge
Gate
Valve



"Jack, my boy, you're promoted..."

"You've earned it by suggesting our changing over to C7000 SPEED NUTS"

"Frankly, Jack, I didn't believe we could speed up our production any more. But when I saw those assembly lines moving about 30% faster, I knew you'd had some smart idea.

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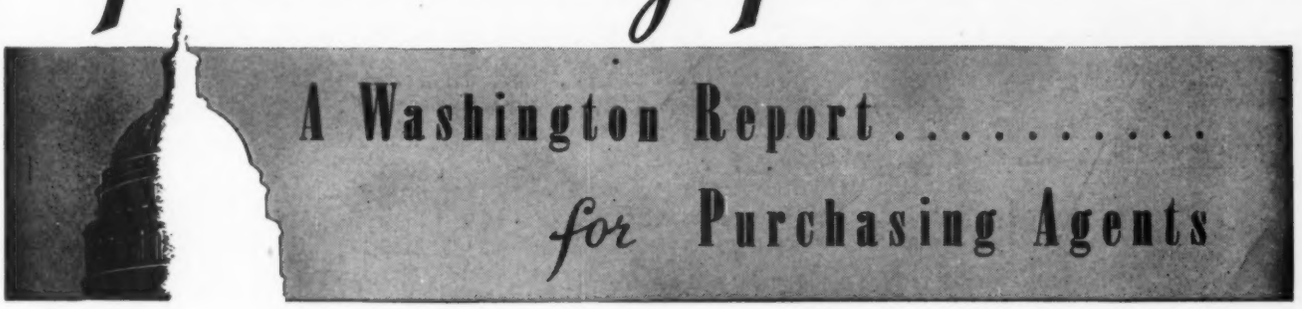


July 1, 1947

LARGE SCALE DISTRESSED INVENTORY UNLIKELY . . .

Realistic view of price outlook reveals that there will be no sharp general break in price levels this year. Adjustments will be on a commodity and industry basis. It is unlikely that manufacturers or vendors will be left holding much inventory that has depreciated in value far below the purchase price.

This optimism is generated by the fact that the post-war slump that caught business after World War I is not being reproduced now. There are similiarities between the developments during that period and in the current cycle, but at the same time new factors have been brought into play that are likely to stave off sharp dips.

One major factor is that the adjustments from the abnormally high postwar demand to a current need and replacement basis is not affecting all industry at the same time. It is a leap-frog adjustment, which means that while the so-called recession affects a particular industry with dramatic force, other segments of industry are building up to new peaks.

Another difference between conditions now and those which dropped the bottom out of business in the early 1920's is that finance and credit are easier, and there is no impelling force that requires holders of inventory to liquidate at distressed price levels.

A third important factor is that the principal competitors for world trade who moved into our markets and took them away quickly after World War I, have proved so far impotent to meet their immediate domestic needs, and constitute practically no threat to our foreign market.

German chemical and metal industries have been put out of the running. Japan can provide little enough for export, and Great Britain has been plagued by a combination of heavily damaged industrial plants and the snare of labor difficulties and social upheaval.

As a result, the adjustments in this country will be motivated primarily by domestic conditions.

MODERATE PRICE ADJUSTMENTS ANTICIPATED . . .

The time factor—a period of extended grace for adjustment to a normal supply and demand relationship, does not mean that prices will stay up indefinitely.

First price drop is the elimination of speculative pricing levels, and this factor came into play as soon as supply caught sight of demand. Some commodities are just beginning to undergo this adjustment, but generally it is agreed that the speculative element in pricing has been eliminated.

Second adjustment has been in the nature of the reappearance of all grades in materials and manufactured items. Where only the higher price lines were available initially, the medium and moderate price lines have begun to show on

the market. While this is only an indirect price adjustment, it has been an important factor. It is important to note that in some of the merchandise lines which are considered in surplus at present, there is a considerable unfilled demand for those same items, but in more moderate price brackets.

The third phase of adjustment will come about through increases in productivity, and in many cases through the availability of substitute raw materials at lower prices.

PRODUCTIVITY INCREASE ANTICIPATED . . .

While increases in productivity have been much heralded by labor spokesmen who have made it an excuse for wage demands, the facts are that real gain in output is still in the future.

Some industries have shown a spectacular gain in productivity during recent years, but this has been due primarily to the fact that the industry was new, and new techniques have been developed.

The great bulk of industry has been in the doldrums as far as increase in productivity is concerned for the war years and for the two year period thereafter. The period has been one of preparation. Acquisition of new equipment and new plants has been going on at a high rate.

Some industries have almost a decade of make-work practices behind them. Example is the construction industry, where labor did not work full time during the late 1920's, worked even a shorter period in the 1930's and developed stretch-out practices which continued through the war.

Limitations on the number of bricks which can be laid in a day, and such similar restrictive practices reflect sharply in the construction trades where there has been no development of tools and machinery to speed up the work. The man-day is the measure of the job, and when this is cut short, productivity remains low.

As manufacturers reduce the volume of their output to meet normal demand, there will be a parallel easing of the labor market. Just as the seller will have to adjust to a buyer's market in materials and goods, so will labor have to adjust to a buyer's market in labor.

INDUSTRIAL MERGERS HAVE BEEN LARGELY HORIZONTAL . . . .

Federal Trade Commission report on the present trend of corporate mergers and acquisitions reveals that about 60% of the mergers have been of a horizontal nature; that is, the purchase of firms engaged roughly in the same line of production.

Vertical acquisitions which involve either the "backward" purchase of suppliers or the "forward" purchase of further fabricating facilities, have accounted for about 17% of the total number. Conglomerate acquisitions, in which there is no discernible relationship in the nature of business between the company which is making the acquisition and the acquired firms, represented 22% of the total number.

The vertical type of acquisitions have an important impact on purchasing during periods of material scarcity.

An impelling force behind such an acquisition is to insure continued delivery of raw materials of semi-fabricated items needed by the acquiring firm for his ultimate product. At the same time such an acquisition cuts off the normal customers of the acquired firm from their source of supply.

Forward vertical acquisitions are most pronounced in the basic materials industries such as primary metals and chemicals (other than drugs), while the backward integrations are outstanding in electrical machinery, textiles and apparel, and paper and allied products. The greatest number are in the textile industry, where converters, selling agents and apparel manufacturers sought to secure supplies of grey goods.

Slash Carton Closure Cost 81%!

Read how Acme Silverstitcher helped manufacturer of medical kits cut carton closure costs from 52¢ to 10¢ on every 120 containers

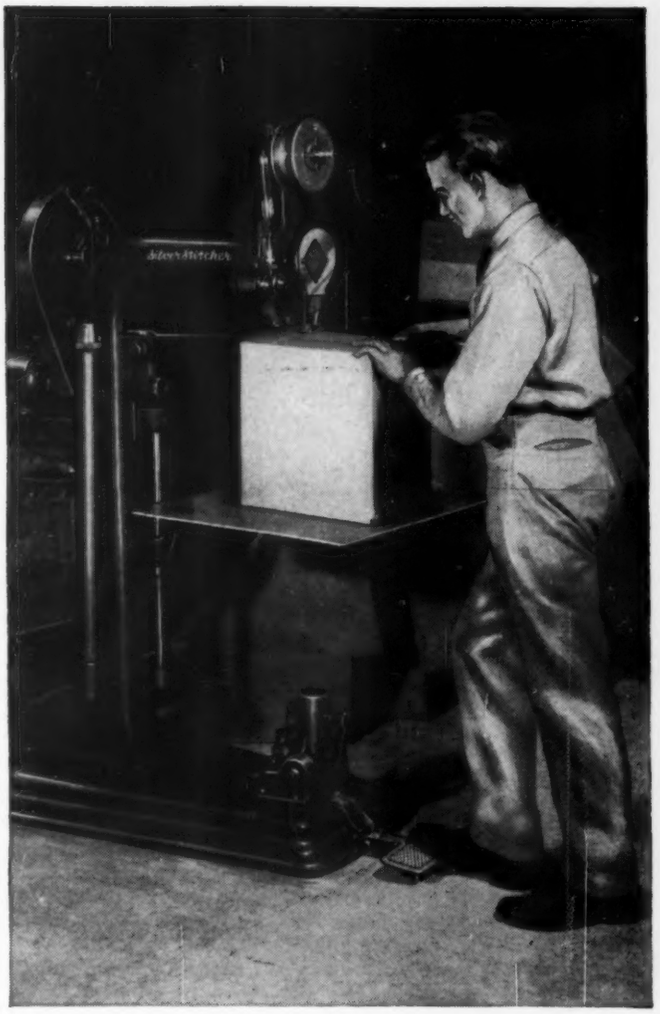
First, make sure your products get to the buyer safely—then, consider the cost of shipping.

When a manufacturer of medical kits and other carton-packaged products analyzed his shipping costs, he learned that he was paying 52c to seal every group of 120 containers leaving his plant. He asked an Acme Shipping Specialist to look over this costly and time-consuming operation.

Better shipping for less money

An Acme 20" Combination Silverstitcher and Acme Silverstitch Wire proved to be the answer! This one machine cut his cost from 52c to only 10c for each 120 containers. It stitched both the "bottom" of the carton and the "top." This type of closing proved faster and far more secure than the previous method.

Acme Shipping Specialists have wide experience in every industry. They make no blanket recommendations . . . but examine each operation for its specific problems. Call an Acme Shipping Specialist to consult with your firm. There is no obligation. Mail the coupon today for more information.



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This Acme 20" Combination Silverstitcher stitches the bottom of the carton before it's filled, and securely fastens the top after filling . . . safe, low-cost shipping for fragile merchandise.

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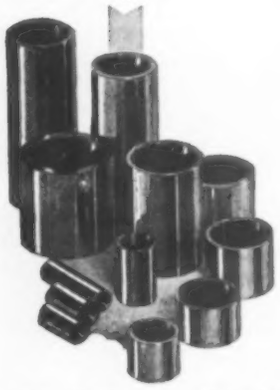

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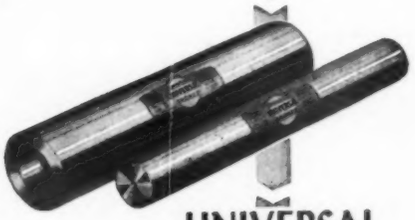

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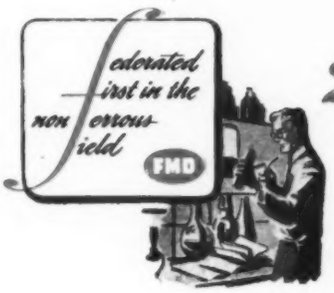

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AMERICAN SMELTING AND REFINING COMPANY

All recessed head screws and bolts have definite advantages over the older slotted head, but the REED & PRINCE type Recessed Head is the ONLY one which can be fitted and driven throughout the entire size range with a SINGLE DRIVER.

THE *POINT* IS ALWAYS THE SAME . . . BUY

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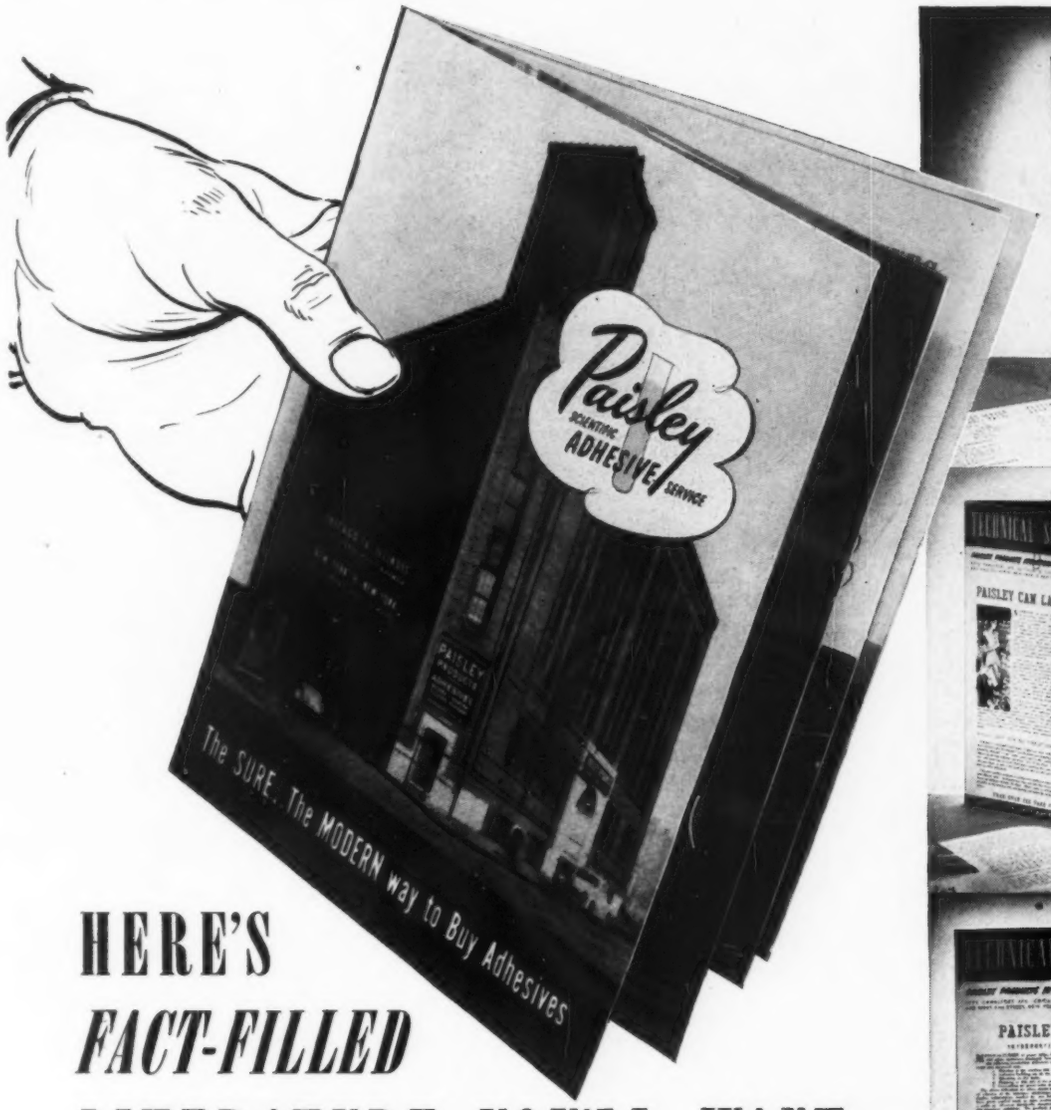

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what's your N-F I.Q.

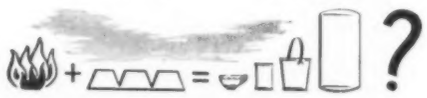
...non-ferrous know-how, that is...

Here's another Federated first . . . a batch of foundry teasers to test your mettle

1 ***Which requires the most heat to melt?***
(a) Aluminum (c) Butter
(b) Copper (d) Lead

2 ***The best atmosphere for melting brass is:***
(a) Slightly reducing
(b) Neutral
(c) Humid
(d) Slightly oxidizing

3 ***About how much water vapor is produced as a product of combustion when melting 1000 lbs. of 85/5/5/5 in a gas furnace?***
(a) 1 pt. (c) 86 gals.
(b) 1½ qts. (d) 11 gals.



4 ***The best guide to the right temperature of the metal in the furnace is:***
(a) The color of the metal
(b) A pyrometer
(c) A double-action thermostat
(d) The B.t.u. input

5 ***The most common cause of defects in copper alloy castings is:***
(a) Wet sand
(b) Dendritic structure
(c) Gas absorption
(d) Low pouring temperature

6 ***What is Di-METAL?***
(a) A 50-50 copper-tin alloy
(b) An alloy for casting caskets
(c) A brand name for certain Federated zinc base alloys
(d) A lead base alloy

7 ***What is a satisfactory method of removing slag from the tip of a pyrometer?***
(a) Hit it with a hammer
(b) Wipe it with a steel-wire brush while hot
(c) Dip it in water
(d) Sandpaper it off

8 ***When should phosphor copper be added to tin bronze melts?***
(a) With the ingot
(b) Just before casting
(c) Just as metal melts
(d) 20 minutes before pouring

9 ***Which of the following specifications indicates the alloy of composition: Cu—4%, Si—3%, Mg—0%?***
(a) F430 (c) AN-A-4
(b) QQA601 (d) S.A.E. 326

Federated METALS DIVISION
AMERICAN SMELTING AND REFINING COMPANY

Federated first in the non ferrous field FMD

10 *How much silver is there in a nickel silver alloy?*

(a) 18%
(b) 0%
(c) 2%
(d) 62%

11 *What alloy of aluminum shows the best heat-treated properties?*

(a) F720
(b) F410
(c) F024
(d) F1020

12 *The best castings come from the foundry that uses:*

(a) Bathing beauty calendars
(b) Fluorescent lighting
(c) New furnace linings every week
(d) Federated ingots

For additional copies of this quiz, or for useful literature about non-ferrous casting alloys and foundry practice, use the coupon at the right.

"DOC TILLITY" says:

Here are the answers

1 Aluminum, because of its high specific heat.
2 Slightly oxidizing.
3 11 gals.
4 A pyrometer.
5 Gas absorption, which leads to porosity.
6 A brand name for certain Federated zinc base alloys.
7 Wipe it with a steel-wire brush while hot.
8 Just before casting.
9 All of them, but the Federated specification number — F430 — tells you the composition at a glance.
10 0%—the name refers to color rather than composition.
11 F410.
12 Federated ingots, of course.

HOW TO RATE YOUR SCORE

Up to three wrong, you're a top-flight foundryman! Four to seven wrong, you ought to refresh your memory a bit.

If your score showed eight or more wrong, you can profitably invest some of your time chatting with a friendly Federated service man or reading Federated's helpful literature. Just call or write any of Federated's 11 plants or 25 sales offices from coast to coast or *Federated Metals Division, American Smelting and Refining Company, 120 Broadway, New York 5, New York.*

FEDERATED METALS DIVISION Dept. P JMLco-F-F1
American Smelting and Refining Company
120 Broadway, New York 5, New York

Please send me the items I have checked:

☐ Non-Ferrous Metals and Alloys booklet
☐ Aluminum Casting Alloys booklet
☐ Test Bars booklet
☐ Reprints of technical articles
☐ Reprint of this quiz

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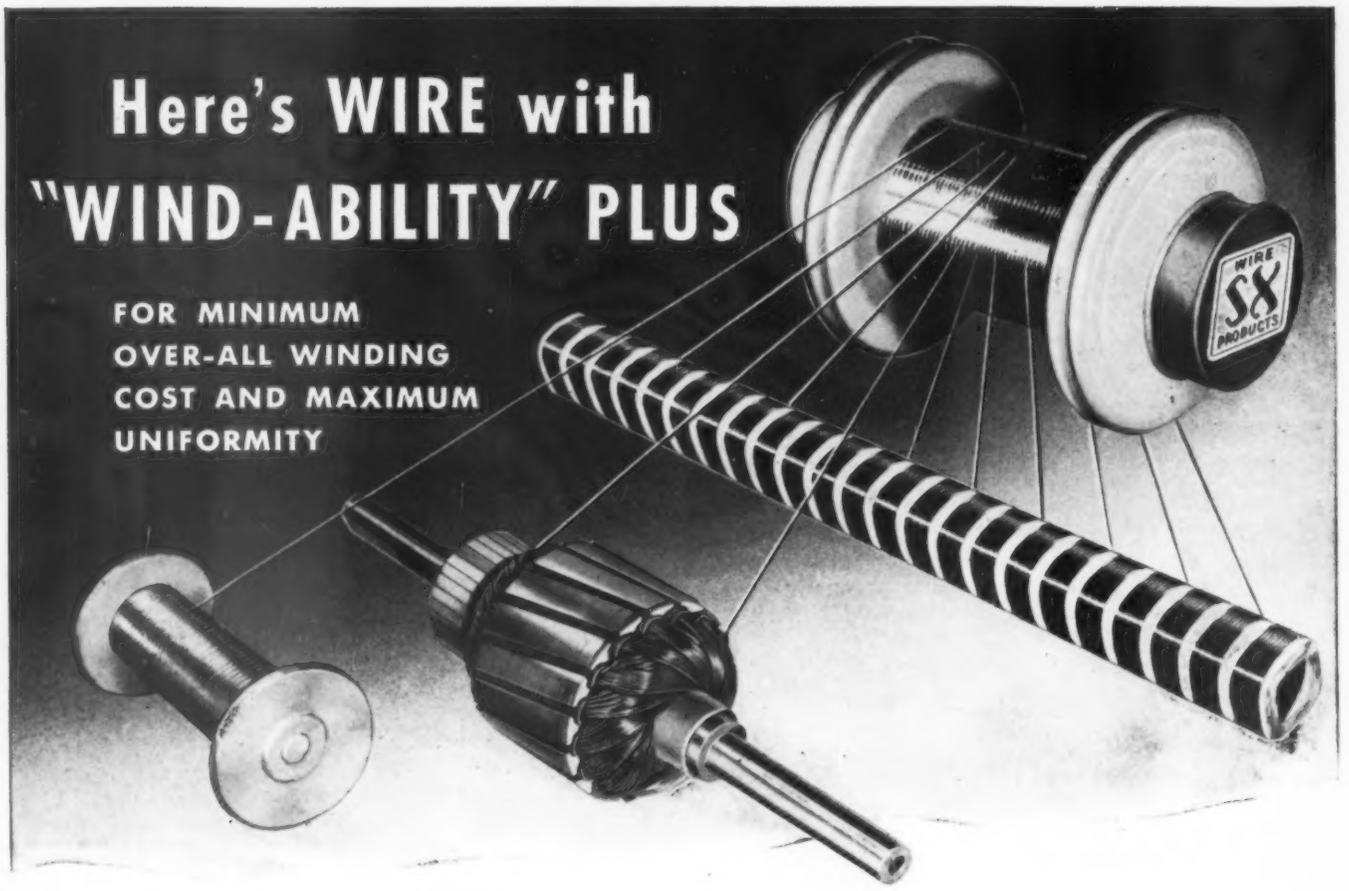
FOR MINIMUM OVER-ALL WINDING COST AND MAXIMUM UNIFORMITY



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Essex Extra-Test Magnet Wire has earned an unexcelled reputation in the most exacting applications. It helps insure coils of uniform size and resistance value—maximum turns in available space—freedom from broken wires, pile-ups, crossed turns, runbacks, spaced turns, and frequent tension adjustments. When you specify Essex Extra-Test Magnet Wire you can be *sure*.

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- Drills
- Reams
- Taps
- Drives and removes screws
- Drives and removes studs
- Extracts broken cap screws and studs
- Runs wire brushes
- Does hole saw work
- Drills brick and masonry
- Drives wood augers

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puts New Life in

MASTER BRAKE CYLINDERS

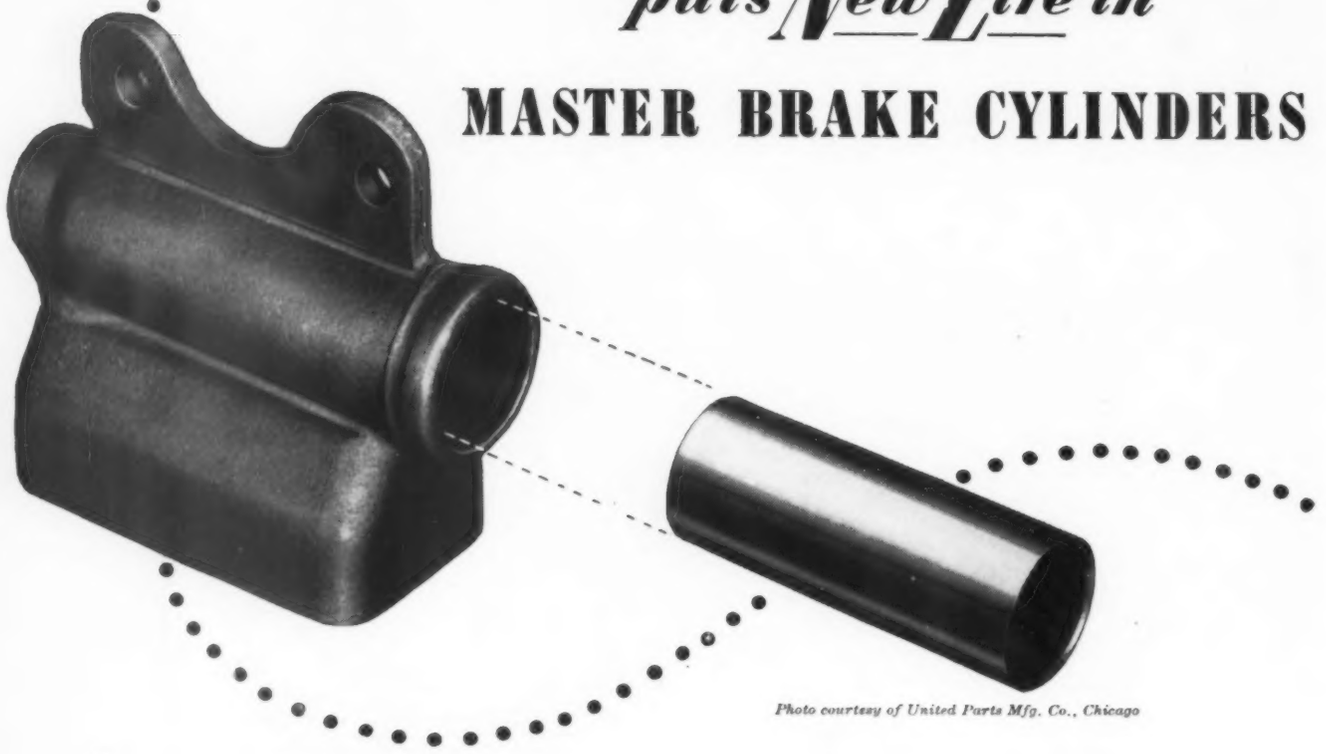

Photo courtesy of United Parts Mfg. Co., Chicago

It would be difficult indeed to count the number of "stops" in the life of a master brake cylinder. But they do wear out. And until the advent of ELECTRUNITE Tubing inserts, each worn-out cylinder was rebored and fitted with a new, larger pump seal.

The trouble? No standardization of replacement parts. A replacement assembly would be too large for one rebored cylinder—too small for another.

The solution? Pump finish inserts of ELECTRUNITE Tubing. Now, by an exclusive patented process, each worn out cylinder is rebored to an exact tolerance . . . the tubular insert is press fitted into the cylinder . . . and the result is a master cylinder with a same-as-new inside diameter. Replacement parts are standardized . . . costs are down.

Simple? Yes, when the manufacturer began using ELECTRUNITE Tubing. Until then, variations in tubing wall thickness, concentricity and surface finish had made this operation impractical from a cost standpoint.

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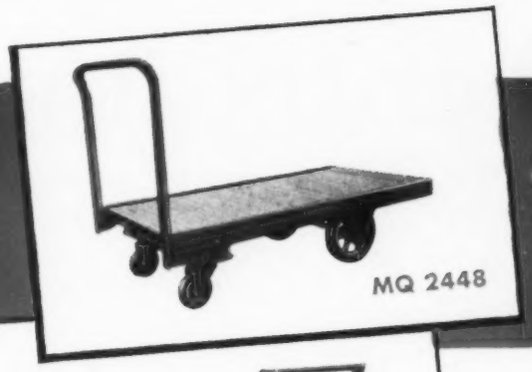

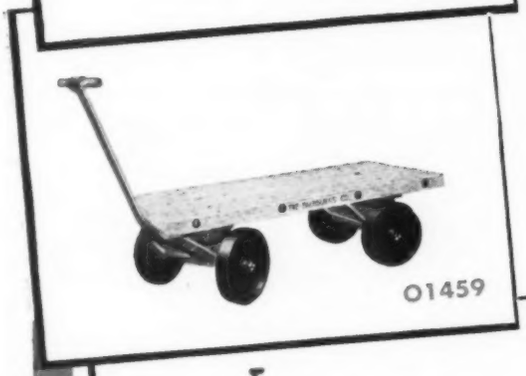

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MQ 2448. **Commander Steel Frame Platform Truck.** Hardwood platforms securely bolted between heavy angle irons; ends and sides armored to assure long life. Heavy duty, double ball bearing, semi-steel casters provide easy rolling and steering. Sizes 24″ x 48″ to 36″ x 72″.

S2742A. **Commander Steel Frame Platform Truck.** Identical in general construction features with the Q type truck, but is Tilting or Center Balance Type for quick turning in small space, around sharp corners, etc. Turns in its own length, pushes from either end. Sizes 27″ x 42″ to 30″ x 60″.

S4681. **Factory Truck.** Hardwood construction throughout, ball bearing swivel type casters. Balances on center wheels. A lightweight, durable, easy-to-operate truck that handles light, bulky loads with unusual facility. Wooden stakes are removable. Sizes 24″ x 48″ to 36″ x 60″.

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PURCHASING

The National Magazine of Industrial Procurement

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PURCHASING is an independent journal not the official organ of any association. It is the only publication of national scope devoted exclusively to the interests and problems of the purchasing executive in industry and government. Established 1915 as "The Purchasing Agent." Consolidated with "The Executive Purchaser."

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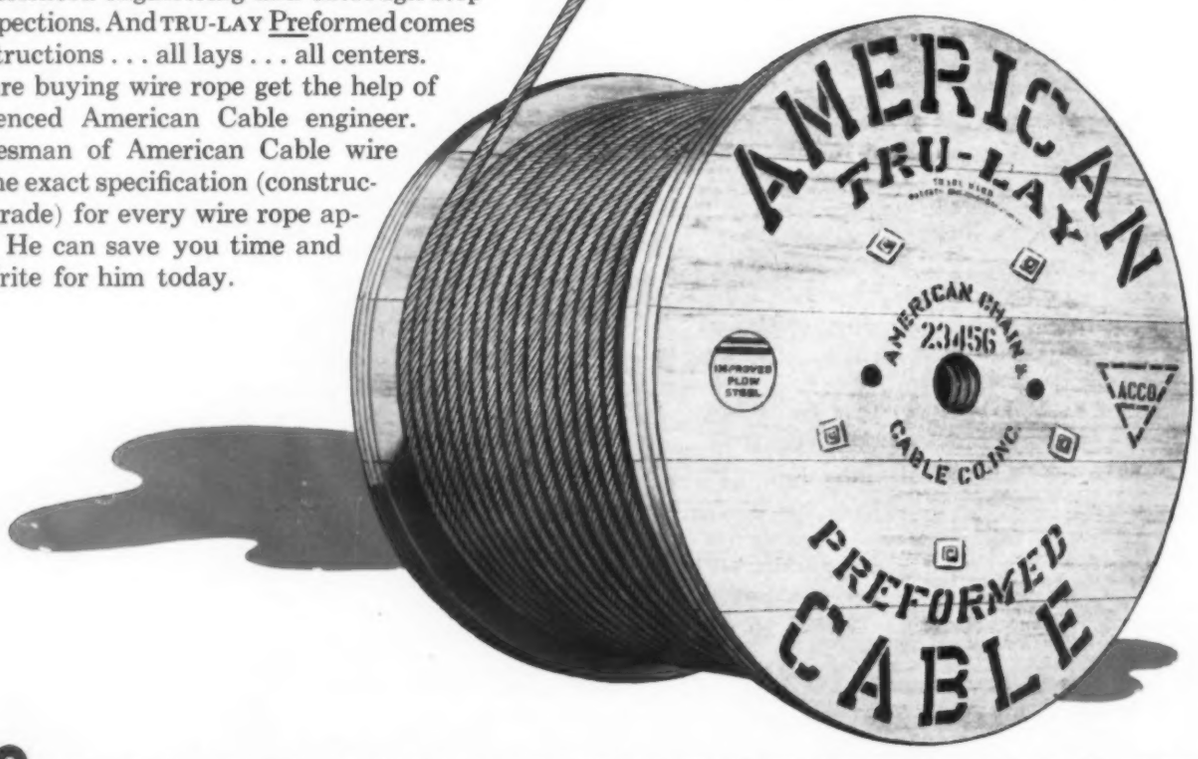

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HOW MUCH? WHEN? FOR HOW MUCH?

THE classic trilogy of supply, delivery, and price provided the timely and practical theme for the thirty-second annual conference of the National Association of Purchasing Agents in June. These basic market factors were traced down in respect to a broad range of commodities and products. Never has there been more urgent need for such definitive information as a guide to buying policies, than in the present unsettled national and world economy. The largest attendance on record — more than 2,700 registered delegates — bore witness to the intense interest of purchasing agents in getting down to these essentials.

If there was one lesson more apparent and more significant than all the others in these three days of serious deliberation, it is that the purchasing job requires more than information alone. It calls for informed judgment, for skill in the interpretation and application of facts, and for the clear decision that gives life and substance to the course of business. These are responsibilities that can not be delegated to any other function of the business organization.

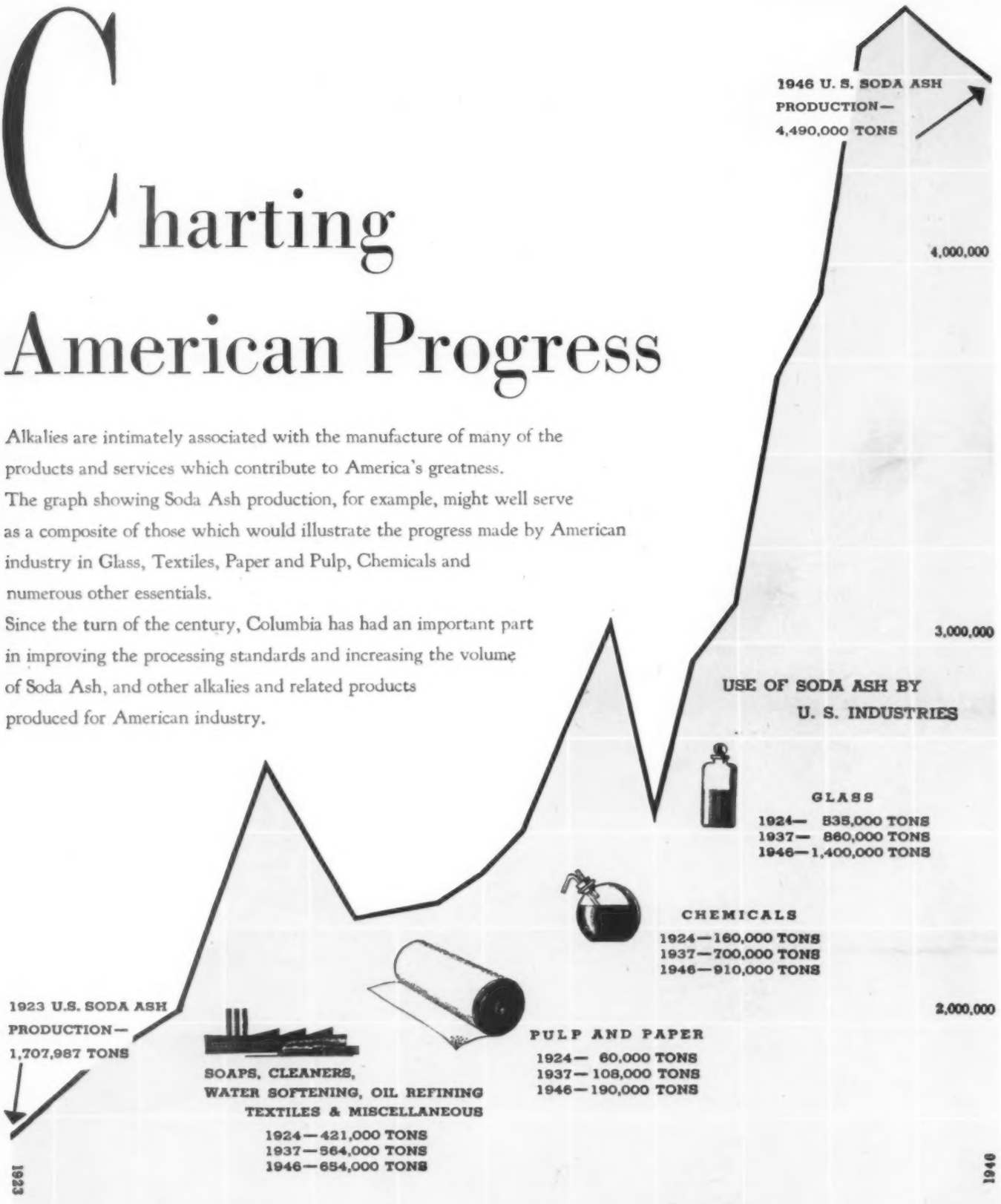
Of market facts, there were plenty presented at the convention sessions. They came from the most reliable and qualified sources available. But frequently they were conditioned with many "if's"; their projection into trend lines and timing was uncertain. In at least one session, on copper, the "facts" were presented from two viewpoints that led to diametrically opposed conclusions.

The 1947 convention will help every purchasing man to do a better job for his company, to gauge markets more accurately and confidently, to keep in step with current and future industrial and economic developments. But all this information will not do the job for him. It helps to set the problem, but purchasing men must still find their own answers. And more than one of the speakers was frank enough to suggest that the outcome will depend largely on purchasing decisions. For it is purchasing that makes markets. To that extent, the future of production, scheduling and prices is actually in the buyers' hands.

Stuart F. Heinritz

Charting American Progress

Alkalies are intimately associated with the manufacture of many of the products and services which contribute to America's greatness.
The graph showing Soda Ash production, for example, might well serve as a composite of those which would illustrate the progress made by American industry in Glass, Textiles, Paper and Pulp, Chemicals and numerous other essentials.
Since the turn of the century, Columbia has had an important part in improving the processing standards and increasing the volume of Soda Ash, and other alkalies and related products produced for American industry.



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HIGHLIGHTS

A brief summary of outstanding features of timely interest and importance in this issue, to conserve the time of busy readers

Highlight of the purchasing year is the **Annual Convention** of the National Association of Purchasing Agents, held this year in New York City, June 2, 3, and 4. In this issue appear reports of all the principal addresses and forum sessions for your information in case you weren't able to attend the conference in person, and for your continued reference in case you did attend but were not able to get everything into your notebook.

Here's a suggestion on reading the issue. The theme of the convention was How Much? When? For How Much? as applied to a wide variety of industrial materials. The answers to these questions, as presented to the various commodity sessions, have been summarized in brief tabular form on page 104, under the heading: **Opinions of the Experts.** Turn first to this page for a quick overall view of market information. In the right hand column you will find a reference to the convention speaker who expressed the opinions cited. Turn to the complete article by that author for more detailed discussion on any item of particular interest.

Paper is a material used in every line of business. On page 124, C. G. Parker predicts that boxboard and wrapping papers will soon be in better supply (See also the Containers Situation, page 132). With the exception of newsprint and tissue, we are nearing balance between supply and demand. But paper has the peculiarity that increased production itself forces increased demand, so estimates may need to be revised.

There seems to be a difference of opinion concerning **Copper.** Both viewpoints were presented on the convention program, as reported in the two articles appearing on pages 122 and 123. If you are interested in this metal, you will want to read both of these market appraisals and then draw your own conclusions as a buyer. That responsibility for the ultimate judgment and decision, by the way, is something that no purchaser can avoid, for it is inherent in the purchasing job and all the expert opinion on markets can serve only as a guide to purchasing judgment. Turn to the **Editorial** on page 85 for fuller exposition of this point.

The current situation and outlook for **Steel** was considered from a number of different angles, with particular attention to the critical items of sheet, strip, and tubular products. For a comprehensive review of the basic factors in these markets, turn to the group of articles starting on page 111, in which four steel specialists describe conditions as they view the market.

At the opening session of the convention, speaking for industrial management, **Robert R. Wason** affirmed faith in the competitive enterprise system, declaring that America need have no business depression despite the many critical problems that face our economy. Turn to page 92 for the text of his address. A similar conviction was expressed by **David M. Meeker** in his address of welcome (page 89) with the further thought that buyers can be of real service by spreading this positive and optimistic business doctrine.

In viewing the overall **Price Situation,** economist H. N. McGill pointed out that price levels must decline if we are to achieve a balance with consumers' willingness to buy and ability to pay, both of which are essential to support high levels of production, national income, and better living standards. (See page 94.) Political and economic factors affecting price levels, domestic and foreign, are discussed by Dr. R. C. Shook, page 96.

Exceptional interest was shown in the **Inform-A-Show** exhibits at the 1947 convention. The show lived up to its title, presenting a most informative display of a wide variety of industrial materials, equipment, and products. A pictorial review of this convention feature is presented on pages 99, 115, 129 and elsewhere in this issue.

Space has been reserved in this issue for two of our regular editorial features of particular and continuing importance to purchasing men. You will find the summary of **Product Delivery Information** on page 139, and Leo T. Parker's review of recent court decisions affecting **Business Law** appears on page 143. This month's article deals with personal liability.

Are you making full use of these monthly departmental features compiled especially to keep you informed on recent industrial developments? A selected list of new **Trade Bulletins and Catalogs** that are yours for the asking (page 14) and the illustrated summary of **New Products & Ideas** now available for the industrial buyer (page 148) will help you to keep up-to-date on these matters.

We're not Doing You a Favor!

In these days of critical shortages, some firms seem to consider it a favor to provide a needed product. But here at Ryerson you'll find no seller's market complex. Every inquiry is still regarded as an opportunity to serve and every order a compliment to our organization.

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FACTS—

the Basis for Sound Action

● *By D. M. Meeker*

ONCE again, the Purchasing Agents Association of new York is privileged to act as host on the occasion of our National Convention. This is not a new honor to us, as we have had this pleasure many times in the past, but never before at a time when conditions are as confused as they are today.

Conflicting views on every hand scream at us from the headlines; rifts within management councils and differences within labor ranks add to the turmoil. In addition to this, world diplomacy seems to be bogging down; commodity and stock market prices appear to be on the decline, and even the economists do not support one another.

The situation is one which calls for cool, level-headed thinking. The nation is awaiting the outcome of our deliberations here in this familiar room during the next several days.

The fact that so many of you have come together at this time is proof positive of the need for such meetings as this. Your committees have planned to supply you with information, not surmise; facts, not guesses; realities, not fantasies—all arrived at sanely by hard-headed businessmen who have spent most of their lives delving into the fascinating problems of *How Much? When? For How Much?*

I think that some of these gentlemen will tell you that although it is necessary for prices to come down, it does not follow that we must have either a severe or a lengthy recession to accomplish this end. At least that is our belief here in this city.

As purchasing agents for the most active and forward looking concerns in our communities, we can be of great service in spreading this positive, optimistic doctrine throughout the land in opposition to the many negative and pessimistic reports which have lately become so frequent.

Someone has said that, without doubt, this is the best advertised recession we have ever had. If this is so, we can bend *our* energies toward discounting present conditions, and look toward the future which, after the necessary adjustments have been made, should present an unparalleled opportunity for those who are able to grasp it.

Address of welcome at the 32nd annual convention of the National Association of Purchasing Agents, New York, June 2, 1947.

DAVID M. MEEKER

Resident Purchasing Agent
The Paraffine Companies, Inc., New York

President
Purchasing Agents Association
of New York

General Chairman
New York Convention Committee—1947

N. A. P. A. Convention Theme for 1947
How Much? . . . When? . . . For How Much?

PURCHASING MUST FIND THE ANSWERS

Management looks to its purchasing departments for the basic information that is necessary for intelligent planning and profitable operation

● ***By George W. Aljian***
President, N.A.P.A.

HOW Much? When? For How Much? These three brief but potent questions keynote this great convention. Questions so baffling but so important that we have all come to recognize them; not only in our waking hours, but alas, for some of us, also in our dreams.

Almost above all else, industry must have the answers to these questions, and right now—not next time the swallows come back to Capistrano. Without them it must grope and flounder like a man lost in the wilderness—for the correct answers to these three short questions are the very keystone to the orderly return of normal economic conditions. Until this triple problem is solved, industry is without a sound basis for any sort of planning.

Keynote address at the 32nd annual convention of the National Association of Purchasing Agents, New York City, June 2, 1947. Mr. Aljian is Director of Purchasing and Packaging, California & Hawaiian Sugar Refining Corporation, San Francisco.

And to whom is industry going to look for the all-important answers? Industry is looking directly to the Purchasing Agent, because the Purchasing Agent is the logical man in the business organization who should have these vitally important answers and who can therefore supply the missing keys to intelligent industrial planning. This is a great opportunity and an equally great challenge.

At the outset, it might be a good idea for us purchasing agents to ask ourselves still another question: "Why, at this particular time, in the most productive and highly industrialized country the world has ever seen, are we uncertain about Quantity, Delivery, and Price?" Unless we analyze and are truly conversant with the economic ills from which our business economy is already suffering, we purchasing agents may be unable to assume the great role we are called upon to play in helping to effect their cure.

As a first step in diagnosing this economic malady, we must recognize the fact that it is one of the consequences of World War II. Much as we should like to banish all thoughts of warfare, we know that the economic ills which war incubates not only are not cured but really become more acute once firing ceases. There are no 24-hour sulfa drugs for them. I am reminded of the motto of one of the most famous fighting units in the world, "Through mud and blood—to the green fields beyond." Thank God the black clouds of war have rolled away, and the blood-baths are over. But we still have to struggle through the last of the clinging mud before we come to the green fields of a normal economy.

Our economy is like an intricate piece of machinery. In the final analysis, the balance wheel which keeps everything running smoothly and in proper mesh is in normal times the immutable law of Supply and Demand.

But what have they been doing to that balance wheel for the last eight years? Because our war effort de-

manded it, just about everything possible has been done to throw it completely out of balance. To increase production of one item, the production of others has been deliberately curtailed and cost factors permitted and encouraged which were ficticious in the relationship they bore to the price of finished products.

As a result, our country entered the postwar period in a sad state of economic unbalance. No new automobiles, no new refrigerators, no new washing machines, no new houses,—virtually no new anything —except one thing: a tremendously expanded productive capacity with 65 million workers.

At first glance the solution to the problem appeared to be simple—production, production, and more production. But it wasn't as easy as that, and industry ran head-on into a stone wall. Our economic sins began to catch up with us and because of the horrible state of unbalance, wages and prices started to play leapfrog with each other.

And then it became clear to all who would see. Production in itself didn't mean a thing. Not one, but two things, were important: production, and cost of production. All are agreed that national prosperity demands high production, but high production and employment can only be maintained with high consumption. And there can be high consumption only if prices are right —right, that is, in relation to wages and the amount of money people have to spend.

"When the price gets right" or "When I can afford it" have become bywords of today. The need for the goods produced has never been greater, but the ability to buy them grows less and less. Whether industry likes to admit it or not, the plain fact is that it is costing too much to produce what it would sell. The cost of production has got to come down.

The cost of production is a composite of many factors—material, labor, costs of selling, overhead, research, and so on. A cost increase in any of them can set up another session of economic leapfrog. I'm not here to beat the drum of any particular interest; nor can I predict whether final economic balance will come through lower relative wages, through greater labor productivity, through technical advances, or through a combination of all of them. But that lower production costs must come is as certain as night follows day.

In most business institutions, two items of expense far exceed all others. One is labor, and the other is the cost of raw materials and semi-finished and finished components required to produce whatever materials, equipment, or services they sell. It is obvious that labor costs, as such, do not come within the scope of the Purchasing Department's activity; but let's look at those other costs which the P.A. can affect directly. Just how big are they? In the language of Hollywood, they are colossal. They represent a proportionate and very grave responsibility. In fact, the success or even failure of the whole operation of the business or industry of which we are a part may well be dependent upon how well we do our job.

The U.S. census of 1940 listed 30,000 P.A's for industrial manufacturing and similar enterprises in this country; those 30,000 P.A's in prewar 1940 spent 32 billion dollars for the purchase of materials, supplies and equipment. Since then, manufacturing outlets have about doubled and most recent estimates indicate that there are now 50,000 P.A's spending approximately 50 billions of dollars annually for materials, supplies, and equipment. Fifty billion dollars is a tremendous sum of money.

Out of every dollar your business or industry spends, the Purchasing Department is responsible for from 25¢ to 40¢—the remainder going to cover taxes, labor, overhead, etc. Now can you see why the way the P.A. handles his job is of such vital importance? A few per cent one way or the other can easily spell the difference between profits and disaster.

So let's review our job very briefly in the light of the somewhat scrambled economic conditions of today. Fundamentally, our job remains what it has always been—the relentless and never-ending search for value. To buy at the right price, in the right quantity and quality, and at the right time is our goal. To do that job efficiently and to achieve that goal calls for knowledge, skill, and study.

But under today's unbalanced conditions, something more is required of the Purchasing Agent. Something new has been added to what Management expects from its P.A.

Let's look at it a moment through the eyes of Management. All industry exists by selling what it manufactures or produces. Accordingly, Management must plan sales campaigns well in advance, decide how much of its product can be sold in a given time, and how much finished and unfinished inventory will be carried. Management must set up production schedules, and probably most important, it must know what production costs are going to be.

Without knowing, "How Much? When? For How Much?", Management can plan just exactly nothing. What's the use of Management planning the production of a million

(*Please turn to page 328*)

WE NEED NOT HAVE A DEPRESSION

The competitive enterprise system can lift America and the World to new high standards of living and prosperity if governmental impediments are removed and as incentives are restored to venture capital

By Robert B. Wason
President, Manning, Maxwell and Moore, Inc.
Chairman of the Board
National Association of Manufacturers

EVERY purchasing agent understands the competitive enterprise system that made America great. Every man here uses two or more competitive sources of supply and requires all advantages to his company from both. You are enemies of waste, of losses and excesses. No man among you believes in scarcity. Your profession thrives on abundance. You take from your vendor and give it to your customer.

It is you who procure the materials out of which come jobs. Your purchased materials, together with labor, create the wealth that gives America its high standard of living. The industries you represent survive and prosper through the economies you organize. Your husbanding of resources helps make America the grocery store and meat market, the warehouse and hospital, the machine shop and granary, for all the world.

You believe in high wages to workers, low prices to consumers, and a fair return to investors. Your daily tasks are inseparable from public services. Your survival as individuals and organizations results from the net additions you make to the welfare of the American people.

As purchasing agents, you know better than most other businessmen that there is not going to be a depression in the second half of 1947. You are crowded by the demand of customers of your enterprises.. You have daily contact with America's increased industrial plant capacity.

In America there is a fifteen-year unbought backlog of goods. There is a jam of unspent money, of unbuilt homes, of enterprise retarded, of inventions to be made, of people retired and discouraged, of farms not tilled, of crops not raised, of products not marketed.

No one can measure the energies of millions of Americans thwarted and frustrated, expressing only fractions of the abilities they possess, fearing instead of venturing, crawling instead of walking, waiting for government to stop playing politics with the economy.

These unbought goods have not been produced in the six months since OPA was taken off our necks. They represent a volume potential that will be produced in the next five years and more. Production will be limited only by the political interventions of the government.

The reduction of poverty and the rise of the nation's standard of living is geared to the production efficiency industry achieves. Despite government impediments, the rate of technological change in industry has increased until it is the most important fact of life in America today.

In the presence of such technological potential it is ridiculous to talk of over-savings and under-investment when taxes prevent American industry from tooling up for the production of countless new postwar products that will create completely new industries. It is conservative to say that, if government interferences do not choke us, we are on the edge of the most glorious period of man's eternal struggle to improve his economic well-being.

It is important to appraise the second half of 1947 before it arrives.

To create every average job in American industry, more than eight thousand dollars of capital investment is needed. It is estimated that $65 billions of new capital is required to create the facilities needed to give adequate and profitable employment to our postwar labor

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Address at the 32nd annual convention of the National Association of Purchasing Agents, New York, June 2, 1947.

force. This amount of capital is entirely available out of the savings of the American people.

Intervention or assistance by the State to create jobs is not needed or desired. Only reduction of taxes is asked, so that capital may be induced to venture. Venture capitalists are the creative geniuses that have built America. They are the inventors who, on their own, spend years to create labor-saving devices. The homesteader who took up land in the West and by his numbers built it was a venture capitalist. The man who invests his savings in a store, devotes his life-time to building its good will, is a venture capitalist.

Venture capitalists take the uninsurable risks. Venture capital needs freedom from excessive taxes to preserve the incentive of profit. The right to a fair return on investment is as fundamental to our economic freedom and progress as the right to a job at fair pay.

Under the American enterprise system, political charlatans gain office by talking about the large profits made by a few corporations at the top, and the large incomes of some investors. They never tell the public about the thousands of enterprisers who invested their money willingly and whose returns are small or who lost their principal in the venture.

The losses to stockholders provide the sanitation for the American enterprise system. Your experimental losses are yours to pay. Your successes are benefits to the public.

The attack on income from investment is an attack on our free competitive system. The incentive of private profit is what distinguishes capitalism from socialism. It is our task to tell America that wages and profits are the rewards for which men work; that they are the same thing; and that neither men nor money will work without wages. We must show that both wages and profits come from production of goods.

Prices and profits can be truly regulated not by government, but only by free competition, which is as impersonal as gravitation. The President would substitute his personal opinion for the laws of the market place. The President cannot expect production to expand while the government takes from the people in taxes the income needed to supply jobs.

When investment drops, production drops. When production drops, workmen walk the streets. If government extravagances would be stopped, taxes would be reduced. The standard of living would rise.

Money has tightened in recent months but is in large supply. It is easily available at low cost. Venture capital, without which the nation cannot have long-term prosperity, is absent from the market. This absence results from suicidal taxation and stupid restrictions on the enterprise of the people. Taxes will continue to choke the economy in 1947. Service costs on the public debt of $260 billions will keep taxation in politics for generations.

Every vendor from whom you buy regularly must be solvent and make profit from your business. To obtain your orders every vendor must contribute to the welfare of your firm and your customers in goods, qualities, services, utilities and conveniences.

For labor, the war has not ended. With the President's help it got an 18½-cent increase in 1946 and 15 cents in 1947. These increases together equal more than 52 hours' pay at wartime peaks for 40 hours' work.

These additions enter into the prices you pay for every item you buy. Many of them enter into prices of everything you sell. This 30% increase of wage rates is a rigidity that cannot be pressed out of prices by Presidential propaganda or exhortation.

Wage costs spread through industrial processes and materials, so that general wage rate increases finally force price increases of close to the percentage of the wage increases on all goods and services. It is fair to estimate that since January 1st, 1946, total industrial costs in the United States have risen at the rate of more than $20 billions per annum as a result of wage increases. The advances are not yet fully expressed, because fuel prices and transportation cost increases are yet to be recorded in industrial costs and prices.

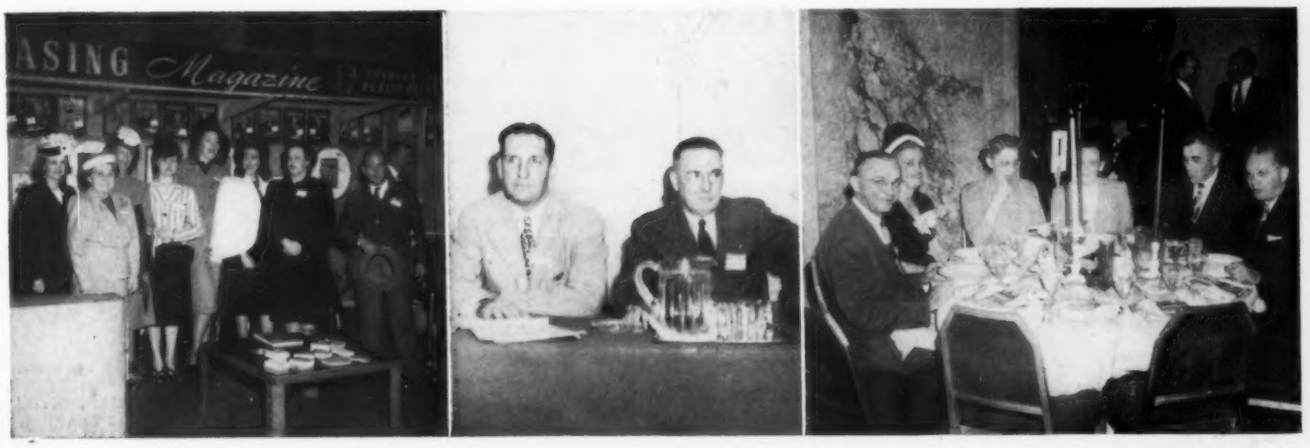
In the long run, labor can hold its gains only by increasing its actual production. Interferences by international organizers must be reduced. The natural ambition of employees will be expressed in a little more work. Mechanization of industry will be extended. Overtime will be kept at a minimum. Jobs will be plentiful, but the employer can be more selective in hiring, in firing, and in employing.

This increase of productivity could help to reduce prices. Don't expect it to happen in the second half of 1947.

If wage levels continue to rise, it will be at the expense of all Americans except those who receive the wage increases. There is no foreseeable decline in wages that can help reduce 1947 prices.

So far the people as a whole have shown no inclination to squander their wartime savings. There has been no significant increase in war

(*Please turn to page* 316)



PRICE LEVELS MUST DECLINE

By Herbert N. McGill
President, McGill Commodity Service, Inc.
Auburndale, Mass.

●

Overall price reduction of 15% to 20% is needed to cancel inflation and bring goods within reach of consumers; specific commodities out of line

BUSINESS and industrial activity, after holding at unprecedented peaks for the first quarter of this year, turned downward in April. Commodity prices reached a postwar peak in early March and have subsequently declined, although moderately. In the endeavor to quickly balance the economic ledger, let us first review the factors which have jacked prices up to current inflated levels.

The huge amount of money in circulation is up 295% since 1939. Shortages of key commodities—metals, lumber, housing, automobiles; lack of normal competition; feverish demand for materials of all sorts; unprecedented savings on the part of labor and the farming group, estimated well over $100 billion; pent-up demand for durable and non-durable goods; speculation and black market operations; strikes which crippled production schedules, and the extensive increase in wage rates which are virtually double pre-war levels; subnormal production per man-hour of work; higher fuel and transportation costs; legislation supporting prices of farm products thru 1948; the Government, still the No. 1 purchasing agent for grains, eggs, and other agricultural products for foreign relief, bidding against domestic consumers, despite talk about wanting lower prices; foreign countries tacking on all that the tariff will bear on every commodity not produced in the United States; heavy loans to foreign nations and record-breaking export trade for a peacetime era which will be extended irrespective of the ability of foreign nations to pay.

To judge the situation impartially and thoroughly, it is necessary to turn to another page of the economic ledger. There are many weak spots to be strengthened: To start off with, commodity prices today are 131% higher than in 1939, 76% higher than in 1929, and 60% higher than the base year 1926. High prices are encouraging a maximum production effort, and the Federal Reserve Index which measures aggregate output, held at 90% above the pre-war base during the first quarter of the year, although in April turned down to 87. With the outstanding incentive to produce, inventories have moved upward with marked rapidity, the latest figure exceeding $38,244,000,000, and incidentally, during the first quarter of this year the inventory rise in durable goods industries was twice as great as the increase in nondurable goods. This automatically indicates a major shift in the supply-to-demand ratios.

Consumer resistance has experienced a tremendous growth, particularly since the campaign led by the Government to cut prices. It is not all consumer resistance, but in part the inability to buy at present high prices. There is no longer any pyramiding of orders, and we detect a growing volume of cancellations in all types of industries. Consumer credit is reaching top-heavy proportions and calls for a greater degree of caution. The building boom which was relied upon to act as a cushion under general recession, is bogging down. Building materials are priced out of the market, and frankly, only the rich can consider construction today.

Earnings on the part of industries have mounted by leaps and bounds with the general increase in 1946 over 1945 totaling 37%. Competition is much more in evidence, verified by the material increase in the number of salesmen on the road. Commercial and industrial failures are back in the limelight with the total up to mid-May now at 1,315 in contrast to 431 a year ago. Unemployment is on the increase, and naturally labor is getting worried. Hence, there is growing production efficiency. Industry is seeking labor-saving devices. We are already in an era of mass production and rapid turn-over, and another step is toward smaller profit margins.

Another point is that considerably less than 50% of the masses have fully participated in the increased wage rates obtained by the unions and the unprecedented financial returns on the part of the farmers. Finally, the nationwide drive to hammer prices down is having considerable psychological effect. However, it should be strongly emphasized that a successful and permanent lowering of the price structure must start at the bottom and not at the top. It is a problem of plain arithmetic. A total of 145 retail and wholesale distributors' ratio of net income to sales in 1946 averaged only 4.5%. The "sickness" that is starting to cripple industry and business today is primarily unduly high prices in specific groups, which have resulted in a lack of confidence.

Turning to the question how much of a decline, the inclination is to turn to 1939 as a base. That year is absolutely out as having any connection with the prospective

(*Please turn to page* 331)

Address at the 32nd annual convention of the National Association of Purchasing Agents, New York, June 4, 1947.

THE NEW PRESIDENT

Garnet T. Dickson Heads National Association of Purchasing Agents for 1947 - 1948

GARNET T. Dickson, Manager of Customs and Purchasing for the Goodyear Tire & Rubber Company of Canada, Ltd., New Toronto, has been elected President of the National Association of Purchasing Agents for 1947-1948. He succeeds George W. Aljian of the California and Hawaiian Sugar Refining Corporation, Ltd., San Francisco.

Mr. Dickson has been associated with the Canadian Goodyear organization for thirty years. He started as a sales representative of the Mechanical Rubber Goods Division at Montreal, was assigned to purchasing in 1921, and has headed the purchasing department at New Toronto since 1932. Prior to joining the Goodyear Company, he was for two years with the T. Eaton Company, one of the world's great merchandising organizations, in the executive training unit known as the "Flying Squad." He has been active in the affairs of the Toronto Purchasing Agents Association, and served as President of that Association in 1941. He was elected Vice President of the National Association in 1946, representing the Canadian District, and is President of the Canadian Council of Purchasing Agents Associations.

He was born in 1895 at Toronto, where his father was Chief of Police for many years. The elder Dickson was a colorful officer who rose from the ranks and achieved an international reputation in his field, serving as Vice President of the International Association of Police Chiefs along with New York's Commissioner Enright. Garnet was educated in the Toronto public schools and at Toronto Technical College. A hockey player of championship caliber, he was active in the sport for several years in the amateur leagues in and around Toronto, playing side by side with many of the men who have gone on to international hockey fame, but he chose instead to follow the less spectacular course of a business career. Amateur sport has been a continuing interest with him. He was President of the Goodyear Hockey Club at the time this club held the amateur championship of Canada. He has also been keenly interested and active in civic affairs, and is a Past President of the Canadian Progress Club. During the First World War, Mr. Dickson served with the Royal Canadian Air Force. In World War II he was drafted for service with the Munitions and Supply Board, Canada's war purchasing agency, as Materials Adviser to the Aircraft Division.

POLITICAL AND ECONOMIC FACTORS IN PRICES

Wholesale prices reached their peak in March and will be 15% to 20% lower by March, 1948

By Dr. Robert C. Shook
Director of Research
International Statistical Bureau, Inc.
New York

PURCHASING agents, of all business groups, are certainly in the best position to see that there is a direct connection between political and economic developments. Where to draw the line between these factors is difficult. When Congress passes a new law or some foreign country imposes an important restriction, these acts could be classed as political. However, there is nearly always an economic motive and in this sense the political development is merely a by-product. Once the political action has been taken, moreover, it may have important economic effects. I believe we will get a better picture if we concentrate first on the pattern of United States trade.

There has been a tendency for some months to regard foreign developments as stimulating to United States business. Heavy shipments of grain had an important influence on the price trend in these markets. The substantial volume of exports also strengthened the domestic business structure by removing substantial supplies from the domestic market. It is only human that many businessmen have generalized from these developments, believing that they would continue indefinitely and largely ignoring the question of dollar supply in foreign countries.

United States exports of goods and services in 1946 amounted to $15.3 billion. Imports of goods and services amounted to $7.1 billion, which left an export surplus of $8.2 billion. This surplus had to be paid for in dollars, which were raised as follows:

$3.1 billion received as gifts.
2.2 billion through the reduction of foreigners' assets.
3.0 billion through the reduction of loan credits.

More than 50% of our 1946 exports depended on the ability of foreigners to raise dollars.

The foreign dollar situation deteriorated further in the first quarter of the year. Exports reached an annual rate of $19.6 billion and imports an annual rate of $7.9 billion. The difference of $12 billion is 50% greater than in 1946 and far above earlier estimates.

Foreigners still have enough dollars to finance their import surpluses for a time longer. But the supply is rapidly running short. There is a limit beyond which foreign countries cannot afford to reduce their reserves of dollars or gold, or their investments abroad.

United States gifts will not continue indefinitely. Ex-President Hoover estimated that "total claims upon American generosity might amount to $1.5 billion or less in fiscal 1948." This is a decline of 50% from 1946, which was down 50% from 1945. And gifts in 1945 had already declined 50% from the level established in 1944, when Lend-Lease was in full operation.

We could, of course, supply dollars by importing more than we export. However, I see no evidence that farmers, businessmen, or labor unions in this country want an import surplus. They may admit in theory that an import surplus is in conformity with our position as a creditor nation. But abandon the tariff or whatever it is that protects their own position?—Never!

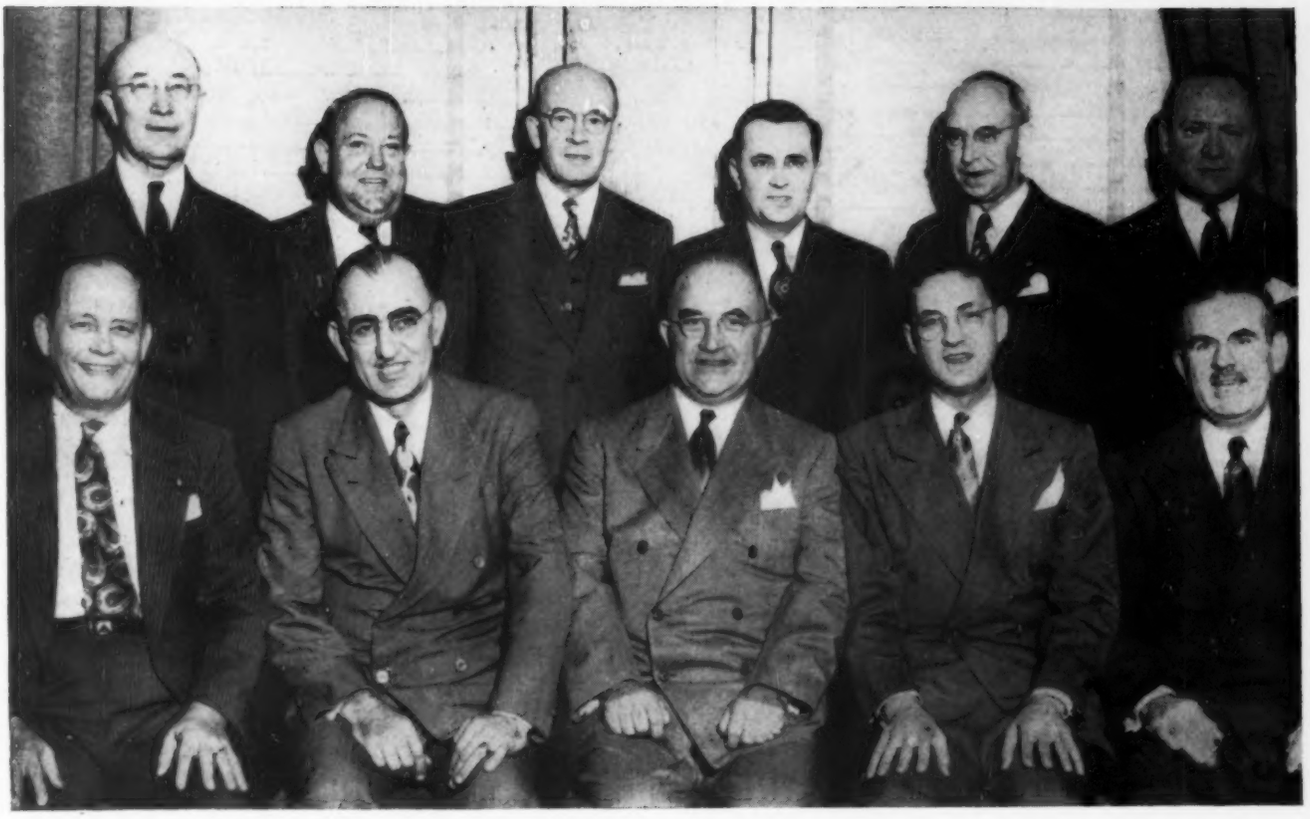
Maintenance of the current trade balance depends directly on the rate at which new loans will be made, either by the United States Government or by private interests. The question of new loans seems bound to come up again when Congress meets next Fall, or in 1948 at the latest. How much? We can get an estimate from the 1946 trade figures. It is a shocking figure. Within a year or two, when foreigners' present reserves and loan credits have been exhausted, new loans at the annual rate of 5 to 7 billion dollars a year will be required to maintain the trade balance of 1946.

Private investors, even those who already have plants abroad, are very rarely putting new money into these ventures. And Congress will have to change radically its thinking about economy, a balanced budget, and reduced taxes, before it can vote a program of this gigantic scope. You will agree with me that loans of this magnitude are simply not in sight.

It is my opinion that the export boom is very near its peak; that foreign as well as domestic buyers will restrict purchases as price weakness becomes more generally evident; that many more foreign countries will tighten their controls or impose new restrictions within the next 12 months; and that there will be a very sharp decline in our exports later this year.

It seems to me that the ultimate success of the Truman doctrine, or of any other aggressive foreign policy, will depend very greatly on the economic backing we put behind it. That means loans. But if we

Address at the 32nd annual convention of the National Association of Purchasing Agents, New York, June 4, 1947.



N. A. P. A. EXECUTIVE COMMITTEE 1947 – 1948

Seated *(left to right)*:

WILLIAM E. RIER, Rotary Lift Company, Memphis, Tenn., Vice President for District No. 7, representing the Alabama, Chattanooga, Florida, Georgia, Louisville, Memphis, and New Orleans Associations.

GEORGE W. ALJIAN, California & Hawaiian Sugar Refining Corporation, Ltd., San Francisco, Cal., Immediate Past President.

GARNET T. DICKSON, The Goodyear Tire & Rubber Company of Canada, Ltd., New Toronto, Ontario, Canada, President.

LEVERETT A. ANDERSON, The Twin Coach Company, Kent, Ohio, Vice President for District No. 6, representing the Akron, Canton, Cincinnati, Cleveland, Columbus, Dayton, Northwestern Pennsylvania, Pittsburgh, Springfield, Toledo, and Tri-State Associations.

HAROLD W. MACINTOSH, L. O. Koven & Bro., Inc., Jersey City, N. J., Vice President for District No. 8, representing the Baltimore, Buffalo, Carolinas-Virginia, Eastern New York, Elmira, Lehigh Valley, New York, Philadelphia, Reading, Rochester, Syracuse and Washington, D C., Associations.

Standing *(left to right)*:

C. S. *WORLEY*, Consolidated Gas Utilities Corporation, Oklahoma City, Okla., Vice President for District No. 2, representing the Dallas, Fort Worth, Houston, Oklahoma City, Tampico, Texas Panhandle, Tulsa, and Wichita Associations.

CLAIR C. PINGREE, Whitmore Oxygen Company, Salt Lake City, Utah, Vice President for District No. 1, representing the British Columbia, Los Angeles, Northern California, Oregon, Utah, and Washington Associations.

JOSEPH C. ANDREWS, The American Hardware Corporation, New Britain, Conn., Vice President for District No. 9, representing the Connecticut, New England, Rhode Island, and Western Massachusetts Associations.

PAUL O'BRIEN, Frank Adam Electric Company, St. Louis, Mo., Vice President for District No. 3, representing the Chicago, Denver, Kansas City, Milwaukee, Rock River Valley, St Louis, Tri-City, Twin City, and Twin Ports Associations.

GEORGE A. IRELAND, National Paper Goods Limited, Hamilton, Ont., Canada, Vice President For District No. 5, representing the Central Ontario, Essex-Kent, Hamilton, Montreal, Toronto, Western Ontario, and Winnipeg Associations.

A. N. PHILLIPS, Schwitzer-Cummins Company, Indianapolis, Ind., Vice President for District No. 4, representing the Central Michigan, Detroit, Fort Wayne, Grand Rapids, Indianapolis, Kalamazoo, Muskegon, Saginaw Valley, and South Bend Associations.

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cling to our "favorable" balance of trade, we must accept the fact that the great bulk of foreign loans made now will be repudiated later.

It also seems to me that any foreign policy implemented by loans will be no better in the long run than the loans on which it is based. Crises eased by loans now will lead to new crises when these loans go bad.

I am very much afraid that our economic attitude, which reflects a traditional export surplus, is in direct conflict with the present move toward a more aggressive foreign policy. I am very much afraid that this will be an insurmountable obstacle, limiting the assertion of United States world leadership.

The conclusion seems justified that United States lending has about exhausted its force as a stimulating or even a stabilizing price factor.

Other foreign developments also have an influence on prices. Inflation in foreign countries sometimes has a stimulating effect on United States prices. This is direct in case a country is a producer of basic commodities needed in the United States, since the internal inflation usually affects the price of the raw material. It is indirect to the extent that it stimulates commodity purchases.

However, these inflations are always followed by deflations. Moreover, many governments in the meantime are led to new restrictive measures, such as the limitation of imports of non-essential goods, in an attempt to combat inflation by focusing all economic resources on the provision of necessities.

Relative currency values also influence prices. The fact that many foreign currencies are over-valued at present has helped increase our export surplus. Imported goods have been coming into the United States at high prices, and it is easy to name many individual items for which demand has begun to fall off. The foreign buyer, however, finds an advantage in the over-valuation of his own currency in making purchases in this market. This advantage has been cut down substantially during the past year by sharp price advances in the United States. Meanwhile the growing shortage of dollars has begun to discourage export sales even though actual shipments have remained high for the year to date. Moreover, the fact that most foreign currencies are now high in relation to the dollar means that there will be a period of uncertainty later, when devaluation becomes necessary.

International institutions have created an articificial situation so far as foreign currencies are concerned. Moderate devaluation is possible through the mechanism of the international organization. There are also provisions for devaluations of greater magnitude, but it is not quite plain how these will prevent the uncertainties that foreign traders encountered in similar circumstances before the war, when such devaluations became a matter of necessity.

The purpose of most international agreements in the past has been to stabilize the price for the benefit of producers. Lip service has been paid to the consumer, and in isolated cases the greater stability of prices can be noted as a real gain. Most of the international agreements that broke down during the war, however, have not yet been restored. It seems too early as yet to conclude that international agreements will be able to stabilize raw material prices at current levels.

Government buying programs in isolated cases must also be considered as a price influence. The best known recent example is probably Argentina, where the government has purchased many commodities from domestic producers at low prices and sold them at high prices on the world market. This type of operation can only continue as long as sellers' markets continue, and there are already signs of weakening.

New trade restrictions imposed by foreign countries are bound to have a depressing effect on United States trade and on domestic prices. Some foreign countries have already been forced to impose new trade restrictions. The Geneva Conference occurred precisely at a time when the first signs were becoming evident that a European Customs Union might ultimately develop.

I believe that foreign influences, as a whole, will be depressing to United States prices during the next year or two. How much prices will go down, however, must be answered on the basis of domestic rather than foreign developments. Prices can come down substantially. Let us consider a few of the factors.

Farm prices will be supported by the Federal Government and many observers have concluded that this means no decline. Support prices, however, are usually set at about 90% of parity, while the average of prices received by farmers is now 20% above parity. If parity were to remain stable between now and the time when support prices are set, it is plain that there could still be a decline of 25% in farm prices.

Many industrial raw materials will decline by an equally great or even greater amount. Fats and oils have been scarce, yet from the peak reached after OPA was eliminated, there has already been a decline of as much as 50% in some cases before a minor rally could get under way. Official quotations for lumber prices are not off sharply as yet; but if local reports are reliable, there have been some substantial reductions, particularly in building lumber. In the case of paper the current supply-demand situation is still tight. Nevertheless, there are reports of declining premiums above contract prices, and the industry has recently begun to take a more conservative view about further expansion.

Metals also provide some interesting contrasts. The brass industry itself is divided in its viewpoint, and I believe that most consumers will not be reassured by these conflicting actions.

The sharp break in steel scrap prices occurred some time ago and there has even been a minor recovery. Meanwhile, it is plain that steel shortages, even for sheet and strip, are not as great as they may have seemed. One of the wartime developments was an increase in the number of small parts suppliers and metal processors, who eagerly built up their inventories of steel sheet and strip. Many mid-western parts suppliers find their products backing up, and it is possible to walk into almost any display room having office equipment and find heavy floor stocks of steel desks and filing cabinets.

Steel people themselves seem to be taking a realistic attitude about

(*Please turn to page* 308)

SOCONY-VACUUM OIL CO., INC.
The HOME of A.R. Purdy Co.
ST. REGIS PAPER COMPANY
AT THE INFORM-A-SHOW
FLOAT PACKAGING with
Spak CREPED WADDING
CORPORATION
UNDERWOOD
& C. MAYERS CO INC
ESTABLISHED 1912
5 FIFTH AVE NEW YORK
GERRARD STEEL STRAPPING COMPANY

AMERICA'S DEPENDENCE ON

To achieve economic stability with a steady flow of materials at reasonable cost, we must stop present wasteful practices and develop resources and production on a world-wide basis

●

By George Stuart Brady
Materials Consultant
Washington, D. C.

LAST year we imported four billion dollars worth of materials, not counting manufactured articles, and it did not anywhere near supply our needs. American industry could not operate without foreign raw materials, nor could the American way of life exist without them. For even a relatively simple piece of modern equipment, we must call on at least fifty countries of the world to supply raw materials.

The United States, with outlying possessions, has something less than 1% of the land area of the world, with about 6% of the population, but it has about half of the modern manufacturing of the world. It is true that this country can produce some small amounts of practically everything. Yet, it is not, and never can be self-sufficient to provide itself with the raw materials necessary to operate its industries and produce the products of the modern industrial age in the amounts needed to maintain and expand the standards that we have built up.

It would be easy to paint a gloomy picture, but I see no real reason why we should have either a bad world economic crisis or another world war. Neither is necessary, and if they can be prevented by only a small measure of that co-operation which businessmen gave to the Government during the war, we are standing at the beginning of the greatest era of progress that the world has ever seen.

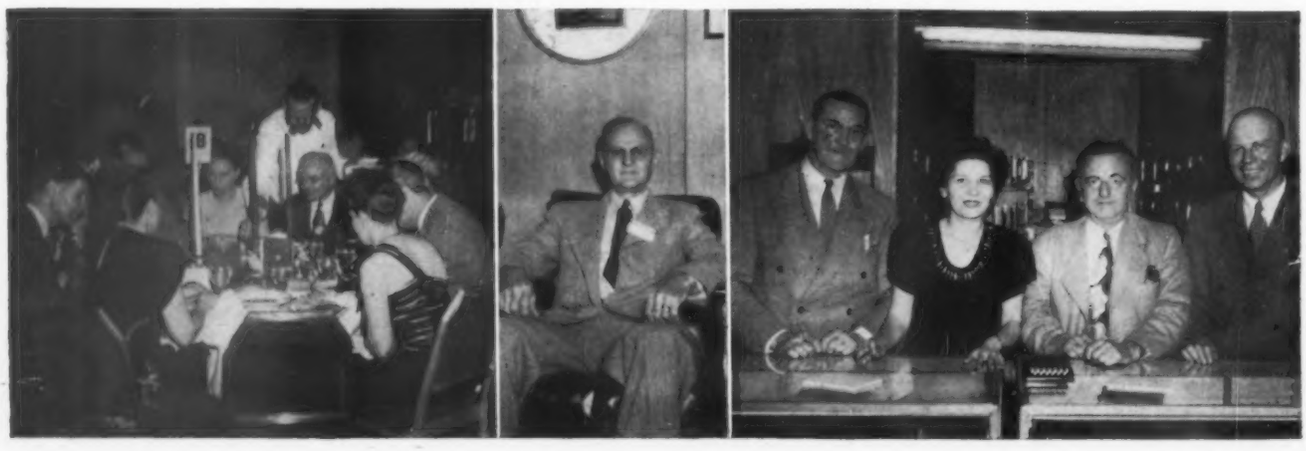
There are no real shortages of raw materials except as we make them ourselves. We make them by neglecting to take advantage of technical progress to develop them, by permitting economic theorists to rule our international relations and impose their messianic schemes instead of asserting the basic right of American free enterprise and going out to trade, and by wasting those materials that are intrinsically scarce in the world because we refuse to change old methods as long as profit can be made the easy way.

There is only about one-fortieth as much lead, and one-fortieth as much zinc, as there is copper in the world, and only about one-tenth as much copper as there is nickel. And we ordinarily consider nickel as a fairly scarce metal from an industrial use standpoint. Tin is a rare metal, there being only one-two thousandths as much tin as there is nickel. These estimates are not based on ore beds or ease of extraction; they are obtained from geologic sampling of various types of earths and occurrences.

Our industrial use of copper is geared to practically the same design techniques as it was when the electrical industry was in its infancy, and the use of brass is the same as it was before the manufacture of novelty articles came to such a mammoth scale. We are still using white bearing metals that are essentially the same as when they were invented more than a century ago. We have developed high-test fuels that require no lead, yet we are dissipating 100,000 tons of lead metal annually in unrecoverable smoke. There is estimated to be 8,000 times as much titanium in the world as there is lead, yet, instead of putting maximum effort on devising improved means of getting the titanium which makes an excellent pigment, we continue to consume more than 100,000 tons of the scarce lead annually in paints where the metal can never be recovered. This year we will use 115,000 tons of zinc for sheet galvanizing, in which the metal is permanently lost, instead of concentrating on changing an outmoded law that prevents the needed expansion of production of the plentiful metal aluminum.

By pushing production of these metals in foreign mines we may meet demands for a few years, but there is not enough copper, tin, lead, and zinc in the world for us to continue our wasteful methods. Our own zinc and lead will be commercially exhausted by 1960 if we do not do something about it. It is no

Address at the 32nd annual convention of the National Association of Purchasing Agents, New York, June 4, 1947.



easy thing to get management to make changes that involve expense where there is still profit to be made by the old methods. But the purchasing agent is in a strategic position to keep hammering away and asking "Why" when metals are called for that are known to have definite shortages. The known annual shortage of tin, for example under our present use pattern, is around 40,000 tons.

The United States consumes about five million tons of vegetable and animal oils annually. We could use twice the amount if the oils could be obtained, and if they could be produced in quantity at anywhere near normal prices the industrial demand would be almost unlimited. We imported about 20% of the oils we used in 1946, but spent millions of dollars in bonuses to maintain uneconomic production in this country. In tropical countries there are hundreds of millions of tons of these oils going to waste every year. The specialized seed oils that are useful for paints and plastics could be obtained in immense quantities from countries where they grow best if industry did not submit so humbly to diplomatic interferences and to those who continue to pay bribes to American farmers for raising crops that cannot be raised profitably in this country.

The files of the Departments of Commerce and Agriculture are packed with data; we do not need more studies. What we need is the serious consideration of private companies willing to invest in equipment and roads to collect, crush, and bring the oils to market. Enough oils could be obtained in the Congo and Amazon Valleys to feed the world and to supply our increasing industrial uses. In more advanced countries capable of raising enormous quantities of oil seeds, all we need are contracts to take the seeds or the oil. Had we been willing to make such contracts two years ago we would now be getting all the linseed we require at half the price we are paying to raise it in the cold climate of our northwest.

The President has recently asked Congress for a continuance of controls over imports and exports. Controls since the end of the war have given us the worst unbalance of international trade that the world has ever known. Last year our exports were nearly five billion dollars more than our imports. This year

THE WHITE HOUSE
Washington

May 24, 1947

To the Members of the National Association of Purchasing Agents:

The 1947 meeting of the association is important to the national welfare. Almost all Americans have their eyes on our major goal of freedom, prosperity and security for all.

In recent weeks I have been gratified to see some sectors of American business announce their determination to lower costs and prices as a means of maintaining the mass markets upon which the steady profits and steady employment depend.

Purchasing agents have always understood the important part efficiency and economy play in large volume production and mass sales. Your daily decisions can help the entire Nation make full and effective use of our expanding industrial power.

I welcome this opportunity to send my respects to the members of your association.

(signed) HARRY S. TRUMAN

exports may be nine billion dollars more than imports, with this unbalance we are driving the rest of the world to the poorhouse. We are protecting ourselves by impregnable walls and draining the resources of the peoples who live outside, making them poorer and poorer.

The answer is not to cut down our exports. Our industries operate most efficiently when they can produce in great quantities, and when their sales peaks and depressions can be levelled off by a percentage of sales to areas with varying economic conditions. Moreover, the world today needs more and more of the machinery and equipment that we can produce with our highly developed skills in order to mechanize their mines, their agriculture, and other production of materials so that these materials can be produced in greater quantities at lowered costs, at the same time raising the standards of living in those countries and enabling them to have the money to purchase manufactured goods. We are at present not buying enough foreign raw materials to enable the peoples of other countries to have the funds with which to buy our goods. We thus have to loan them more and more money as we drive down their credit, and they can never pay us back unless we do buy their materials.

The tariff system, useful when our primitive industries needed protection against the developed industries of older countries, is now merely a wall that keeps wages on a low level in other countries and encourages us to produce some materials uneconomically. Reasonable tariffs are useful when they equalize conditions brought about by inequities that cannot be cured otherwise. But a tariff, or bounty, that helps to perpetuate an obsolete or an uneconomic industry within our borders is a crime against modern industrial progress.

The manufacturing industries were the fathers of the tariff. But today the tariff and the bounty system has been exploited by the agricultural interests to fabulous proportions, with the result that the manufacturers pay greatly increased prices for their raw materials, in addition to which they lose foreign markets for manufactured goods because the foreign nations are unable to get the exchange by selling us more raw materials.

Seventeen countries are now in conference with the United States trying to formulate general trade agreements that will help to bring about more equitable exchange of raw materials and goods. But how can we hope to make an agreement with one hand and slap down a heavy restriction on a country's trade with the other hand? Let us ask ourselves why industry, and especially the now powerful groups of purchasing agents, were not active in showing Congress what all this means to the supply of raw materials and to the democratic way of life in the world, and why the purchasing groups did not insist that men with practical knowledge of materials' supply be sent as representatives to the Geneva Conference instead of the host of theorists. In a democracy, government is only what you make it, and if industry does not take an active part in government you can expect to be governed by the textbooks of the theorists.

The original intent of official Government stock piles of raw materials was to provide sufficient difficult-to-get foreign materials so that industry could meet a sudden rise in demand in a war emergency. The number of such materials listed for stock-piling is approaching a hundred, and will grow. Stock piles are only an emergency aid, not a solution to the materials' supply, and dangers are already appearing in the system. It has become apparent that the Munitions Board is overconfident of the value of these stocks, and that in its confidence it is neglecting the real subject of materials' supply. Moreover, industry is already beginning to count on these stocks. The amounts of materials in the stock piles are supposed to be secret, but it is quite easy for anyone familiar with the movements of any commodity to figure out how much is in the Government stock, and we are going to find that there will be a continued lessening of the quantities that industry normally has itself in stock and in transit, with the result that the over-all stocks in the country will be no greater than if there were no official stock piles.

The stock piles are not sufficient for the great strain on materials' supply that will come with another war. We must encourage the expansion and modernization of materials' production in foreign countries, and make definite provision to keep open the lanes of world trade from these sources. It is absolutely necessary that we take leadership in this because there is no other nation in the western world with the funds and the technical skills for it.

The world development of raw materials does not apply merely to metal mines; it applies to the development of oilseeds, fibers, waxes, resins, starches, paper pulp, and many other materials. In doing this we would be providing ourselves with increased sources of materials at lower cost because they would be developed where the conditions are most favorable for their production. We would also, by mechanizing the basic materials' production of the world, be eliminating the tortuous hand labor that characterizes so many foreign countries and keeps them in poverty. Thus, instead of imposing tariffs with the idea of protecting ourselves against cheap foreign labor, we can export our equipment and skill to help labor raise its standards.

I do not believe that it is the function of democratic governments to go into the business of producing raw materials. It can be done on a great scale by great companies. There is nothing immoral or wrong in bigness in a company; it is only the abuse of power in a cartel that is wrong, and governments should be content to see that those abuses do not exist. With the reputed cartel control of 59% of world materials before the war, we were able to get the raw materials we needed at prices that were average.

I think that I have shown that working along the lines discussed will bring the things that we are after, namely, a greater supply of foreign raw materials, more seasonable prices, and profit to the producers. But I feel that in this serious transition period businessmen must also be economic statesmen. They must remember that the communism that is now rampant in the world is nothing more than a social heresy, and that all heresies arise from the failure of entrenched systems to meet the changing needs of progress. If we are to defeat communism we must correct the abuses of western capitalism. There are plenty of these abuses in international materials' supply. The excesses of the broker system, for example, are a disgrace to western civilization. You pay high prices for your mica and your shellac, but the native producers of India receive the equivalent of five cents a day, just enough to buy them sufficient rice to keep them alive in wretched poverty. What an opportunity that gives for the preaching of communism! We cannot wash our hands of those conditions and say that we are not responsible.

SHIPMAN MEDALIST 1947

ROY C. HABERKERN
Vice President
and Purchasing Agent
R. J. Reynolds Tobacco Company
Winston-Salem, N. C.

PURCHASING's highest award —the J. Shipman Gold Medal— was awarded to Roy C. Haberkern, Vice President and Purchasing Agent, R. J. Reynolds Tobacco Company, Winston-Salem, N. C., at the banquet session.

The presentation was made by Past President Robert C. Swanton, Purchasing Agent of the Winchester Repeating Arms Company, New Haven, Conn. The committee for the 1947 Shipman Award consisted of H. Leland Weber, Fibreboard Products, Inc., San Francisco (Chairman); Roy F. Stiles, Stewart-Warner Corporation, Chicago; and R. C. Swanton.

Text of the Citation follows:

To commemorate the memory of one whose diligent, faithful yet unobtrusive service contributed much to the advancement of purchasing and the propagation of the National Association of Purchasing Agents; to honor similar service in a manner befitting the accomplishment and to express the gratitude, appreciation and respect of purchasing agents for leadership which enhances their standing and the standing of purchasing in the business world, the Purchasing Agents Association of New York has founded the

J. Shipman Gold Medal

to be awarded through the National Association of Purchasing Agents to one who by precept, example, or distinguished service has contributed to the advancement of purchasing.

The committee appointed by President Aljian to make the selection this year has spent much time in reviewing the imposing list of men who might merit this award. It has been a warming experience to all on this committee to find so many men who qualify for consideration.

The man selected is a purchasing agent who, through his industry and ability, has advanced from a very humble position to become a Director and Vice President of the large corporation with which he is associated.

He is a charter member of his own Association, a Past President of it, and has received its highest honor. A most active worker in N.A.P.A. affairs, he has been a Vice President and a wartime president of the National. He has held the chairmanship of two important N.A.P.A. committees and has carried out their programs with success and distinction. He is now a member of our Advisory Committee.

A sincere and forceful speaker and writer, he has addressed many of our local associations, has been a keynote speaker at our conventions, and has contributed many articles to the business press on purchasing. He has given unselfishly of his time, ability and energy to the Association for the advancement of the purchasing function in business.

Born in Indiana, he moved to the south in his youth. Although a very busy man in the interests of his company, his many outside interests include farming and animal breeding. Active in civic affairs, he devotes much time to the management and support of an organization devoted to the education and welfare of underprivileged children in his community. A man of gentle and charming manner, he is firm in his convictions, strong in his many friendships, and has the affection and admiration of his many associates.

The committee has unanimously selected for this highest award, the J. Shipman Gold Medal—

Roy C. Haberkern

whose modest, unselfish, sincere and persistent efforts for the advancement of purchasing, and whose able assistance and guidance to purchasing agents in their endeavors, eminently qualify him for this, the highest award within our power to confer.

OPINIONS OF THE EXPERTS

Summary of market information presented at the N. A. P. A. Convention

WHAT	HOW MUCH	WHEN	FOR HOW MUCH	WHO SAID IT
Alcohol	Now scarce due to shortage of molasses.	Plenty in 1948, when new process production facilities come into operation.	Prices will go down to 40¢ per gallon or less.	Oostermeyer
Benzine	Situation is getting tighter.	Several months before a balance is reached.	Prices rising.	Oostermeyer
Burlap	Sufficient, with careful distribution.	Third quarter. After that it depends on Calcutta quotas.	High.	Alexander
Coal	Highest grade coals are depleted. Ample supply of other grades.	Safe reserves now in industrial stockpiles in case of a work suspension this summer.	Holding the line on prices.	Baird
Containers, Paper	Situation easing.	First quarter of 1948, as new capacity comes into production.	Price rise is over. Reducton depends on raw material costs.	McLeod
Containers, Steel	Production high, but not equal to demand.	First quarter of 1948 if steel sheet shortage is corrected.	8-1/3% over 1937.	Barton
Containers, Textile	Plenty.	Now.	Continued high, due to high costs of cotton and labor.	Alexander
Copper	Domestic resources are ample.	1948.	Slightly down, allowing for high costs and tariff protection.	Cates
Copper	Foreign metal is needed	Reasonable balance in 1948.	Prices should be down on basis of cheaper foreign sources.	Dallas
Fuel Oil	Scarce.	A year, or perhaps two years, before balance is attained.	Steady.	Barrett
Glycerine	Presently scarce.	Spring of 1948.	Prices down and stable.	Oostermeyer
Gray Iron Castings	Supply improving.	Balance within the next few months.	No reduction in sight.	Reese
Lead	Plenty.	Now.	Prices will hold through third quarter. May be down 20% in 1948.	Cornell
Lumber	Better grades are in short supply. Ordinary grades ample for curtailed construction needs.	Softwoods, now. Hardwcods require time for seasoning.	Prices easing. Inflationary factors and upgrading are on the wane.	MacLea
Malleable Castings	Commercial foundries in tight position.	Balance is several months away.	No reduction in sight.	Reese
Paper, Board & Wrapping	Production at all-time high; so is demand.	Balance will be reached sooner than in other grades. Perhaps this year.	Prices softening.	Parker
Paper, Book	Gradual increase.	1948.	Will follow general price trends.	Parker
Paper, Newsprint	Depends on imports. Canadian production is high; Swedish supply unpredictable.	Saturation point several years away, barring a major depression.	Continued high.	Parker
Paper, Tissue	Demand sharply up with many new uses.	Ample supply is many months distant.	Will follow general price trends.	Parker
Pulp	Production sharply up; so is consumption. Inventories low and declining.	No immediate prospect of improvement.	Domestic and Canadian prices steady. Swedish prices 30% to 50% higher.	Weber
Steel	In balance with current demand.	Fourth quarter, 1947.	No significant change.	Austin
Steel, Flat Rolled	Presently scarce due to inadequate finishing facilities.	Before end of 1948.	No significant change.	Austin
Steel, Stainless & Cold Drawn	Ample.	Now.	No reductcn.	Hamaker
Steel, Sheet & Strip	3 million tons short of present annual demand.	Balance is a year or more away.	No reduction.	Hamaker
Steel, Pipe & Tubing	Production up, but not equal to demand.	Firm orders now on books through 1950.	No reduction.	McConnor
Steel, Wire Products	Supplies are tight.	Pressure easing.	No reduction.	Hamaker
Textile Fibres, Cotton	Will supply 68% of total domestic fibre requirements.	Seeking broader markets.	Cost relatively low compared with other fibres.	Hagen
Textile Fibres, Synthetic	Production sharply up; will be triple prewar volume by 1950.	Consumption will keep pace with expanding production.	Stable, with long term downward trend.	Quig
Zinc	Ample if subsidy is continued.	Now.	Price to consumers may recede this summer if subsidy is continued.	Cornell

CRITICAL CHEMICALS

.....and what the Chemical Industry is doing about them

By J. Oostermeyer

President, Shell Chemical Corporation
San Francisco

IN the chemical industry, our responsibility starts with raw materials in their simplest and most abundant form—the gases of the air, the water of the sea, the sulfur and the coal and the limestone and the oil in the earth—and extends all the way to finished synthetic products such as rubber, dyes, plastics, fabrics and surface coatings. Most of the materials we use in our operations, such as acids, solvents and catalysts, are also chemicals which we are expected to make for ourselves. You might think that we would be allowed at least one loophole at the raw material end—that we should be in line for some sympathy when the supply of one of our starting materials runs out. But no! We are the boys in the white coats with the magic microscopes and test-tubes. "If you can't get the coal," they say, "use sawdust. And if all the molasses is being kept in Cuba to make rum, just look at all those cornstalks!"

We have just gone through—and, in fact, are still going through a period of severe shortages in many chemicals. To touch on them all, or even only those of major importance, would require much time and make a very dull and repetitive recital. Let me therefore select for examination only a few typical examples of the widest general interest, indicative of what I believe are significant developments and trends in the chemical industry today.

Now the basic or groundswell movements in the chemical supply picture these days have superimposed upon them a lot of confusing ripples due to the generally upset condition of the postwar period. Let us try to get these into their proper perspective by dividing chemical shortages into three types:

First, short-term shortages due to depleted inventories, pent-up consumer demand and momentarily high purchasing power. Every industry has the problem of contending with these shortages at the very time that it is struggling to reconvert from wartime to peacetime production, but I believe we all have them pretty well appraised by now and are seeing our way out of the woods.

Second, longer-term shortages due to demand exceeding production capacity, but not raw material supply. During the war, and in many instances because of the war, we developed new demands for many staple chemicals and found ourselves at the end of hostilities with inadequate facilities to meet them. This situation is being remedied as fast as we can throw up the additional plants or convert installations built by the Government during the war. Among the many examples of the shortages which will soon be alleviated in this manner are those in ammonia, methanol, formaldehyde, chlorine, caustic soda, soda ash, sulfuric and other acids.

Third, and finally, we have the really *basic* shortage which arises when the demand for a given chemical outgrows not only the productive capacity but *also* the supply of the raw material from which it is made—the type of shortage which everyone expects the chemical industry to solve by turning to the sawdust and the cornstalks.

We have a number of this third type of shortage with us right now. We have been worrying about them for some time, checking and cross-checking our statistics and our projections and our plots, and maybe we have not done as much about them as we might have, but then we did have a war on our hands and it came first in our thoughts and our work and our production. But now we are digging our way out, and the raw material which is coming to our rescue in case after case is not sawdust or cornstalks, but petroleum.

I do not believe that any of my industry colleagues will disagree with that statement or censure me if I give it considerable emphasis by my choice of examples in the discussion to follow. Petroleum chemicals deserve all I am about to say about them—it is merely a coincidence that my particular company happens to be engaged in their manufacture. Any other speaker you might have selected would have to pay oil the same tribute for getting us out of some of our worst supply situations.

As a first example — a product with which nearly every purchasing agent has come into contact at one time or another (and possibly even here at this meeting)—let me select *ethyl alcohol*. I should say right from the start that ethyl alcohol has a dual personality, and should really be regarded as two separate and distinct chemicals. *Potable* or *beverage alcohol*, which is the form of ethyl alcohol that some elderly ladies of excellent intentions would have you regard as the Mr. Hyde side, is made from corn, rye, barley, wheat, grapes, fruit and potatoes, one or the other of which appears always to be in plentiful supply if the price is right, and experience has proven that this is one product which is very hard to price out of the market. Over on the Jekyll side, however, *industrial alcohol* enjoys no such fortunate position.

Many of the large industrial users of ethyl alcohol would have to go out of business if forced to depend on the fermentation of expensive grains. Their principal source of supply has always been the relatively cheap blackstrap molasses, and over the years the price of black-

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Address at the 32nd annual convention of the National Association of Purchasing Agents, New York, June 3, 1947.

strap has been a matter of the greatest interest and concern. Today, with demand outstripping the normal molasses supply, and the latter endangered by new ion-exchange methods of sugar refining which yield more sugar and less molasses, industrial alcohol has been as high as $1.00 per gallon, and the future would indeed look discouraging were it not for the presence on the scene of two new raw materials: wood wastes and petroleum gases. Two commercial plants for the manufacture of ethyl alcohol from wood wastes are now in operation in the Pacific northwest, following successful pioneering work in Canada and Germany. Synthetic ethyl alcohol from petroleum is not new, having been successfully manufactured in West Virginia and the Gulf Coast area for many years, but production will soon be greatly increased by at least one large new plant in Texas. It is my confident prediction that we shall see the present price drop and stabilize within the next year or two in the 30-40¢ per gallon range, at which firm level we shall all profit by the further devlopment and growth of the many industries to which this is a vital intermediate or solvent.

The tight ethyl alcohol situation is also being relieved to an increasing degree by replacement by other alcohols derived largely from petroleum and natural gas. *Methyl alcohol,* which first came from wood, then from coke-oven gas, is being made from natural gas in all the new plants. Synthetic methyl alcohol, which will soon be available in plentiful supply at a reasonable price, is expected to displace ethyl permanently from such uses as anti-freeze.

Isopropyl alcohol is produced entirely from oil refinery gases and, at its stable price in the 30-40¢ per gallon range, has been displacing ethyl alcohol from many uses such as lacquer solvents and rubbing alcohol. Very recently, ***normal*** propyl alcohol, also a petroleum product, has appeared on the market, and at an attractive price. This new alcohol will also undoubtedly capture markets which ethyl alcohol will have to come down in price to regain.

This discussion naturally enough opens up the whole question of *solvents.* Solvents, in their quiet, unobtrusive way, have been the work horses of the chemical industry without which many of the striking advances in the fields of lacquers, finishes, plastics and synthetic fibers would never have been possible. We have come a long way from the day when a purchasing agent bought solvents from a short list containing such familiar names as wood spirits, petroleum ether, ligroin, naphtha and benzine spelled with an "i". Nowadays any one of a dozen suppliers will submit a thick catalogue filled with tables of data about miscibility, compatibility and kauri butanol values, and will send his bright young men into your plant to prescribe a solvent or mixture of solvents to dissolve anything you have, carry it in solution just the way you want it, and lay it down whenever and at whatever rate you specify. The list gets longer every day, and an increasing number of the new entries is coming from petroleum. Avid though the demands may be, supply is catching up fast and bringing with it that boon to the purchasing agent, a reasonable and stable price structure.

From solvents it is an easy step into *finishes*—paint, varnishes, lacquers, enamels and coatings of all types. At the present pace of development in this important field, there were bound to be shortages—serious shortages—but these too are being met. Among the worst recently has been the shortage of linseed oil and of drying oils in general. Many measures are contributing to its alleviation. The planting of flax is being encouraged by the Government, and imports increased from such countries as Argentina. Soy bean oil is coming into the picture to a steadily increasing extent, and great things are being done with fish oils. A notable advance has been the application recently of solvent extraction techniques, old by now in oil refining, to the separation of natural oils into drying and edible fractions.

Most important, nowadays, among the finishes are the synthetic products such as the alkyd resins, and here is where we have run into a real ring-tailed shortage of the basic type where we have had to find an altogether new raw material. One of the primary constitutents of alkyd resins is a synthetic chemical which goes by the imposing name of *phthalic anhydride,* and the raw material from which it has traditionally been made has been naphthalene, a coal-tar product with which you may be familiar in the form of mothballs.

Well, when you make steel, you need coke; and when you make coke you get coal-tar; and coal-tar contains just so much naphthalene. As long as the steel mills keep going, and the naphthalene supply exceeds the demand for phthalic anhydride you are sitting pretty and the development and application of alkyd resins goes merrily on. There is however, no relationship between the consumption of alkyd resins and that of steel, and for some time now we have been watching a really striking rise in the former without

any material increase in the latter. Today it is pretty well recognized that, although everything is being done to increase the recovery of naphthalene from coal-tar, the amount we need simply is not there and we must go to some other raw material for our phthalic anhydride.

Fortunately, research in the petroleum chemical field has come up with the answer, perfecting within the past few years the manufacture of phthalic anhydride from ortho-xylene, a component of gasoline. The first petroleum phthalic plant is now in successful operation on the West Coast, and oil refiners all over the country are busy extracting ortho-xylene from their gasoline while the phthalic producers are converting over from 100% naphthalene as fast as they can. I am happy to state that from the very outset ortho-xylene has been made available at a price only slightly above the coal-tar by-product value for naphthalene so that the chemical industry can report with some pride that the day has been saved for alkyd resins as far as phthalic anhydride is concerned.

In saying that the future of alkyd resins is assured as far as pthalic anhydride is concerned, I used the expression advisedly because these resins have simultaneously run into another of our serious basic shortages—that of glycerine, which is also a major component. Here again, as in the case of naphthalene, our national supply of an important chemical has been traditionally tied to another unrelated operation, the manufacture of soap from fats and oils. When fats are split or saponified the main product is soap, while glycerine is simultaneously obtained in a dilute solution from which it is recovered and purified whenever the operation is justified by the market demand and price.

Few chemical products have experienced the fluctuations in supply, and consequently in price, that have characterized the history of glycerine. In 1933, for instance, it was listed at about 10c per pound, and there were many idle recovery units around the country and quite a bit going down the sewers. In sharp contrast we have the situation today in which glycerine is quoted at prices above 50c per pound.

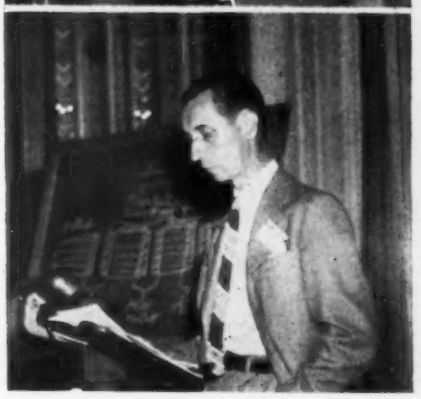
Glycerine has been short before, and has sold at high prices, but we have always pulled out of it. Will we do it again? I for one am inclined to doubt it, and, as I will point out in a moment, we are gambling fairly heavily on that judgment.

On the supply side, we have of course the very tight situation worldwide with respect to fats and oils. Any chemical manufacturing process which is forced to compete for raw materials which are edible, or which can be made edible, is in for some tough going in the foreseeable future.

A shortage of fats and oils has naturally meant a shortage of soap, but synthetic detergents, the so-called "soapless soaps", many of them based on petroleum, have stepped into the breach and are doing a fine job. These products are now competing with soap on an equal price basis, at the same time offering improved properties such as sudsing in hard water and absence of scum, and I do not believe they will ever yield their gains to soap again no matter what happens to the supply of fats and oils. And whenever less soap is made, there is less by-product glycerine.

Now, let us look at the demand side of the picture. During the war, the requirements for nitroglycerine, the main ingredient of dynamite and of propellants for shells and rockets, increased greatly, and you will recall the waste fats drive when we were all called upon to help out in building up the national glycerine supply. This particular demand has, of course, been intermittent in the past and we hope it will continue to be more and more so in the future, but the disagreeable fact it may recur on short notice cannot be overlooked.

At the same time, however, we have been steadily building up non-military demands for glycerine



EDUCATIONAL COMMITTEE IN SESSION

Chairman Al Hayes

Stan MacKenzie reports on the New York courses

Dan Donovan describes the New England program

John Conant shows how they did the job at Philadelphia

Ed Scully outlines the need for "How to Buy" courses

which have not shrunk with the return to peacetime conditions, but which are certain to maintain and increase their growth. In addition to its use in alkyd resins already referred to, glycerine is needed in compounding cosmetics, softening cellophane, moistening tobacco, and other equally promising lines.

So we have a condition of increasing demand and decreasing supply. What are we doing about it? Well, we are doing something we should have had the foresight to do some years ago. We are finally building a plant in which we will make glycerine synthetically out of petroleum and salt, both abundant raw materials—a step which will free a chemical of vital national importance in times of war and peace alike from dependance on the uncertain supply of a perishable raw material.

This $7,000,000 plant, which is going up on the plains of Texas just as fast as present-day conditions will permit, will not be ready until the Spring of 1948. I don't believe that we in the chemical industry can excuse ourselves for not being ready for the glycerine shortage one-half as plausibly as we can for some others. The synthetic process was ready to go ten years ago. We should have been able then, or certainly in the years following, to anticipate the wartime requirements and to extrapolate the trends in industrial utilization so as to predict the present short supply.

It is easy, of course, to place all the responsibility on the supplier with the synthetic process. All he had to do was figure the future, put up his $7,000,000, wait a year or two while his plant was being built, and set out with his order book on a tour of flinty-eyed, hard-hearted purchasing agents, each with the old-fashioned notion that glycerine was something you could get for nothing if you bargained long and hard enough. Now we chemical suppliers are a hardy and adventurous breed, but there are some cases even in the chemical business when discretion is the better part of valor.

This is substantially what has held up synthetic glycerine. I do not believe I am violating any confidences when I tell you that it might not be on the way even now if we had not come across something new in what I might call industrial statesmanship. Some of the biggest buyers of glycerine — men who would be in the strongest position to ride the by-product price down when the time came—elected instead to take the enlightened long-range view and shoulder some of the supplier's unwarranted burden of risk by signing long-term contracts at a fair price. Had we had the vision and foresight to get together and do this sort of thing years ago, there need have been no waste fats drive and there would be fewer gray hairs among the purchasing agents who are now scrambling for the short supplies of glycerine at high prices.

I have done my best to pick out a few of the more serious and interesting chemical shortages, and to describe how we are going about solving them. I have tried to leave out as much of the white coats and magic test-tubes as possible, and still convey to you a general impression of how fast things move in our particular business and how well equipped we must be with *laboratory research* well in advance of our immediate requirements, with *economic research* to define and interpret conflicting trends, and with *market research* to predict what products you fellows are going to want by the time we can get the plants built, what quantities you are likely to demand, and whether you will pay us enough at that time to enable us to recover our capital and earn a few dollars for our stockholders.

I have been too busy trying to answer your questions, "How Much? — When? — For How Much?" to give as much time as I would like to that last idea. Things move so fast nowadays that the time required to build a chemical plant looms very large against the rate at which demands grow or change, and it seems that no matter how sound the data on which you finally freeze a plant design, the chances are that by the time it is built it will be much too small or much too large or have altogether the wrong proportions of co-products to fit the market. This is where we frankly need help from you, the purchasing agents — all the help that you can give in the fullest spirit of co-operation to round out the projections of demand upon which we base our plans and risk our capital. This is not only a supplier's problem, for whenever there is wrong guessing and waste on the scale on which we operate today we all suffer.

As a representative of your chemical suppliers, I have tried to answer the questions you have selected as the theme of your meeting. It will not be long now before we suppliers will be coming around to see you, or perhaps sending you an occasional letter or a market research questionnaire in an attempt to gather information that we are going to need in laying our plans to anticipate and meet future shortages. All I ask, in the interest of all of us in the long run, is that you lend a sympathetic and understanding ear at that time to *our* questions —How Much? — When? — What Will You Pay? — and Will You Sign a Contract Now?

HENDRICKS CLUB MEETING

A revitalized Hendricks Club held its annual dinner and initiation ceremonies in the Le Perroquet Suite of the Waldorf-Astoria on Monday evening, June 2nd, with about seventy members in attendance. This exclusive social organization comprises the past officers of N.A.P.A., the "fallen pillars" of the Association, together with a few honorary members who fall roughly into the same category.

The committee appointed last year to arrange this meeting all disclaimed responsibility for the results. Nevertheless they came up with a highly satisfactory and enjoyable program, a restatement of the creed in printed form, and the first comprehensive roster of membership. The handsome dinner program was embellished with gems of verse from the works of the cowboy poet and purchasing agent, Will James.

The incoming class included six members of the retiring Executive Committee who, after an appropriate ritual, took the pledge of fellowship and accepted the charge not to take themselves too damn' seriously.

Lee Bussman of St. Louis was chosen as Coordinator for the coming year, succeeding Bev Countryman of St. Paul.

SQUIRE BEN NEWBERY

seems to detect an unpleasant odor during his address. Beside him on the dais are Expediter Art Hopcraft and Coordinator Bev Countryman.

THE INSTALLING OFFICERS

Chief Torturer John M. Brown of Hartford, flanked by his assistants, Gerald "Red" Smith of Fort Wayne and George McCaffrey of Syracuse

THE ASPIRANTS—CLASS OF 1947

Front row: **Garnet T. Dickson, Toronto (Reformed salesman — typical porridge eater—has stretched his job for 26 years); James A. Cooney, Retsof, N. Y. (Represents the biggest N.A.P.A. district and is—horizontally—the biggest man in the 1947 class); Ralph O. Keefer, Pittsburgh (Splits his head in the middle and, like Harry Truman, plays the piano).**
Standing: **Charles M. Healey, Jr., Springfield, Mass. (Handsomest of the aspirants. Belongs to every organization in Western Massachusetts. Buys bulldozers for streets and bull moose for City Zoo); E. G. Swanson, Moline, Ill. (En Svensk herre, en lard herre. Ocksa ar "Gil". En bra karl); Robert G. Matley, Detroit (A man of contradictions—believes that silence is golden, yet is famous as professor of a school of purchasing).**

CONVENTION NOTEBOOK

NUMBER ONE registrant at the convention—first man to claim his tickets and badge at the registration desk Sunday morning—was Past President R. C. Haberkern. Two days later, at the banquet, Roy was hailed as Number One purchasing man of the year, recipient of the Shipman Award for 1947, well merited recognition of the leadership he has contributed to his profession and Association.

Other "firsts" at this convention: first session specifically devoted to the interests of women in purchasing, and first meeting of Shipman medalists as a group. Both are slated to become annual features.

No "first", but an old convention custom, was the announcement that the Attendance Cup had been won by the Utah Association for the umpteenth time. That cup seems to have its roots deeply established in Salt Lake City. Runner-up was Houston, always a strong contender, and third place went to Dallas.

With seven official "question askers" ready to do their stuff at the concluding session on prices, there was exactly one question from the floor. Maybe the speakers had anticipated all possible problems in their formal commentary, or maybe the folks in the audience were just ready to pack up and go back home.

The meeting of the Educational Committee took on a real classroom atmosphere when "Professor" John Conant went to the blackboard to demonstrate how the proposed "How to Buy" course fits in with the overall program. According to present plans, the new course will get a try-out this coming year in New York, Philadelphia, Chicago, and New Orleans.

Coming the longest distance to attend the meetings was Purchasing Agent R. E. Gillis of the Goodyear Tire & Rubber Company's plant at Wolverhampton, England. There was a real international flavor to this convention. R. T. Head of Cia Minera de Penoles, Monterrey,

R. E. Gillis

Mexico, President of the Tampico Association, was on hand. The new president of N.A.P.A. hails from Toronto, Canada. And to complete the picture we had attractive and competent Marylou Lanni, Purchasing Agent for the United Nations.

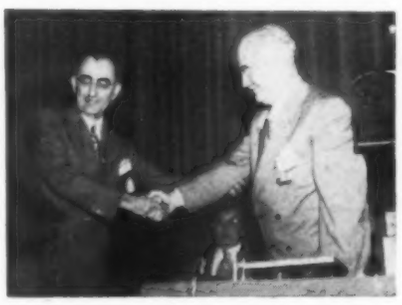
Successful diamond prospector was R. W. Summersgill of the United States Rubber Company, New York, who came closest to guesstimating the correct number of diamonds (1,118) in the L. & C. Mayers Company display at the Inform-A-Show, and won a handsome watch as a prize.

Everybody won at the Associated Spring Corporation booth, at least so long as the supply of "Slinky" springs held out. This unique and amusing gadget proved to be one of the real hits of the show. Incidentally, we are glad to see the passing of the old punch-card system that was used in former years to lure the customers to the exhibit and reduced the whole affair to something of a formality. It's partly a sign of the times and partly a tribute to the caliber of the exhibits that no artificial respiration was needed this year to mark the Inform-A-Show as a vital part of the meeting. It was consistently well attended throughout the convention, and there was a high degree of interest in the products on display.

Clayton Rand, the banquet speaker, had no announced topic, but drew an appreciative round of applause when he stated as his text: "How fortunate we are that we don't get all the government we are paying for."

He had made it a point to get the background of his audience by attending the general session and containers forum on Tuesday preceding the banquet. His impression of the present market: "You can get just about anything you need if you can afford to pay for it and can find something to put it in."

The younger generation was well represented. Among those we met were teen-agers Mary James of Tulsa and Dolores Selby of Los Angeles, both enjoying their first visit to New York; Jim Alexander, Jr., of Chattanooga, currently busy getting a start on his business career in New York City; and Millard Merrill's son, registering from the University of Texas, where he is completing his studies in radio broadcast engineering.



Another chapter of Association history has been written. Garnet Dickson of Toronto takes over the presidency from George Aljian at the closing session.

FOUR important papers presented at the convention dealt with the situation in iron and steel. Consensus of the steel men is that the widely publicized black market operations have been greatly overemphasized and do not actually represent any significant tonnage. The industry is rapidly working toward a balance between supply and demand, and such a balance should be achieved in most products before the end of the year. No early relief should be expected in the sheet and strip situation, however, nor in tubular goods and malleable iron castings. The steel men were also agreed that there is no reason to expect lower steel prices, either on the basis of costs or demand.

THE OUTLOOK FOR STEEL

Addresses delivered at the 32nd annual convention of the National Association of Purchasing Agents, New York, June 2-4, 1947.

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OVERALL SITUATION IN STEEL

By David F. Austin
Vice President,
United States Steel Corporation
Pittsburgh

THE steel industry's present capacity is not only in excess of normal consumption, but also is in excess of the steel required to supply even the current demand, exclusive of that needed for rehabilitation of inventory.

A balance between supply and demand in most steel products will be reached by the end of this year. However, there is no sound business reason for the lower steel prices at this time.

When you men, individually and collectively start to buy in amounts which will not further increase your current inventories, then you will know that our task at long last is confined to satisfying current production demand. Then and then only will we both know that demand and supply have at last been balanced.

While the over-all capacity of the industry is more than adequate for present and anticipated demand for years to come, the industry foresaw and continues to be aware of, increased products and is expanding finishing facilities to meet this demand.

Most important in this category is flat rolled steel. Facilities for the manufacture of flat rolled steel are being expanded rapidly. When all of these planned facilities are completed and in operation, sheet and strip shipments will rise from the previously all-time high of 16,000,000 tons shipped in 1941, to an amount slightly in excess of 19,000,000 tons. It is my belief that in spite of annoying delays all of these facilities will be in operation before the close of 1948.

Within two years new facilities and new processes for tin mill production will increase capacity from 4 million to 5 million tons. Additional facilities are also being completed which will further expand the production of wire and wire products, as well as many other items which make up the industry's product assortment.

When these new finishing facilities are actually in operation, and when we have filled the inventories pipe line, the capacity for these products, in my opinion, will be in excess of demand, as forecast for the next decade.

The prediction of a steel balance, by the end of this year, is based on the presumption that Government directives governing steel for export will remain at current levels. A variation of a single component will, obviously, destroy the value of this prediction.

The Price Outlook

Steel, at present levels, is and will continue to be the lowest priced basic product. If demand were to evaporate suddenly, or decline sharply, it is impossible to predict how far steel prices might decline. But if demand remains reasonably constant during 1947, it is my personal opinion that there will be no significant fluctuation in steel prices.

As a profit-maker, steel has been and continues to occupy a position near the bottom of any list of representative earners. Steel industry earnings in the second quarter, unfortunately, will be even less favorable. In my opinion it would be dangerous indeed to close the spread between present costs and selling prices further and thus raise still higher the already elevated break-even point.

SHEET AND STRIP

By L. S. Hamaker
Assistant General Sales Manager
Republic Steel Corporation
Cleveland

NO early relief should be expected in the sheet steel and strip situation. We estimate the present flat-rolled demand, exclusive of tin mill products and plate, to be in the neighborhood of 19 million tons a year. This is about 3 million tons greater than the present capacity. This year, if we experience no major interruptions, the industry should ship 16 million tons of flat-rolled products, its theoretical capacity, which will be an all-time record but still 2 to 3 million tons short of the effective demands.

Although a number of new continuous cold mills are now under construction and on order, some of which should get into action late this year, it must be kept in mind that new hot mills represent the only true additions to total sheet capacity. New cold mills only divert steel from the hot-rolled to the cold-rolled category without adding anything to the over-all tonnage available.

We likewise see no early relief in the flat-rolled situation through a slackening of demand in any important industry. The Republic Steel Corporation estimates that there will be a 4 million ton shortage in finished steel during the next 12 months and that about half of this shortage will be in sheets and strips.

Some of the other forms of steel will be a little easier soon. Some already are. Stainless steel is now in ample supply. The larger sizes of cold drawn bars are readily available. Carbon bars are becoming easier and alloy steel has never been tight since the war ended.

So far we see no let-up in the demand for merchant pipe. Wire products are still extremely tight as is plate, but the pressure doesn't seem to be quite so great. Tin plate demand continues at the urgency level. Back of all this is a huge unsatisfied export demand. We estimate that about 7¼ million tons of steel would be exported this year if the domestic situation would permit. The final figure probably will be about 4½ million tons, well below the historical percentage.

We see no possibility of a general reduction in steel prices, nor in fact any sound reason for such a reduction, because steel prices are not out of line with other prices.

The fundamental reason for the slow expansion in steel capacity, aside from the fact that it takes two years or more for an installation of any importance to become effective, is purely an economic one.

The steel industry of this country is capitalized at $50.20 per ton of ingot capacity. That is our investment in plant. The new capacity built during the war cost $128 per ton of capacity and many costs since that time have gone up. The depreciation reserve doesn't cover even half the replacement cost, so we must dip into capital for the balance.

With the cost of building new capacity more than twice anything we have ever experienced up to the war, what is there in the steel industry to attract the huge amounts of new capital needed for any substantial expansion? We don't know. In 1946 Republic earned 3.8% on sales and 5.3% on our investment. This is fairly typical for the industry, and just for comparative pur-

poses I might mention that the automobile industry normally earns about 14% on its investment. The capital required for any large scale expansion installed at present costs will make the earning record still worse. All steel companies are drawing heavily on capital to maintain present capacity at full efficiency. Steel capacity has been increasing at the rate of 8 million tons every ten years for a long time and will continue to grow at this rate or faster, but that does not mean any quick relief for the abnormally tight situation we are in today.

We do not think there is going to be a depression or even a sharp recession any time in the near future. Many factors are out of adjustment and readjustments must and will take place on a step-by-step basis, but we anticipate a very high level of business activity for a number of years.

Even the overall price structure doesn't worry us too much, in view of the very high national income level, though some prices are badly out of adjustment.

We see no possibility of a general reduction in steel prices, nor in fact any sound reason for such a reduction. Steel prices are not out of line with other prices. As a matter of fact, the commodities which have the greatest bearing on the high cost of living are those commodities which are artificially supported by the government.

As long as we can maintain our high operating rate we have every hope of holding the general price level where it is, though there are some items on which we are currently showing a net loss.

The flat-rolled steel situation, if it isn't the tightest segment of the steel industry, is at least the one which causes every one the most headaches. The demand for sheets and strip has been growing at a faster rate than total steel demand for 25 years. In 1920 these products represented 13% of the total steel produced. In 1940 it was 30%, and the trend continues upward. As stated, we estimate the present flat-rolled demand, exclusive of tin mill products and plate to be in the neighborhood of 19 million tons a year. This is about three million tons greater than the present capacity.

No early or substantial relief seems possible in the flat rolled situation through new production capacity. We likewise see no early relief through a slackening of demand in any important industry.

For the next twelve months (beginning now) our most careful appraisal by individual steel consuming industries indicates an effective demand for 68.6 million tons of finished steel. The practical capacity is near 86 million tons. This would produce 64½ million tons of finished steel if we can have full and uninterrupted operations. This is 4 million tons short of potential demand and about half of this shortage, we estimate, will be in sheets and strip.

This may seem like a gloomy picture, but actually it is not. Steel is being produced and shipped at a tremendous rate. Industrial production is at record levels and will stay there for some time to come. Almost every manufacturer using steel is doing business at a rate he never before reached in peace time, but it isn't up to the rate indicated by his expansion plans or his order book and he is very unhappy.

The impression exists that the great tonnages of steel being produced are not being fairly distributed. We are constantly told that the automobile industry is getting more than its share. It may interest you to know that last year the automotive industry took slightly over two-thirds of the steel to which it is historically entitled. The automotive industry will break no records this year nor will it use a record tonnage of steel.

A considerable number of smaller industries, many of them in the consumers durable goods field, are going to break their all-time production records this year, though their conversation with us would indicate that the sheriff is breathing down their necks. It appears that most major household appliances will establish record highs. The people who are in serious trouble are the new companies with no established mill connections and I frankly don't know what is going to happen to some of them until steel becomes more readily available.

The net of all this, if our thinking is right, is that we face a continuation of the tight situation in steel for some time, with some relief in certain products. The fundamental cause for this situation is not a shortage of steel capacity, but rather an attempt to make up a five-year deficit in durable goods while supplying an extremely high current demand based on the highest peace-time national income in our history. We will eventually catch up, but it must be apparent that with steel basic to all industry, the most inflationary thing that could happen would be any serious interruption in steel production. Let us hope that our labor leaders and our government will have the statesmanship to recognize this fact.

GRAY IRON AND MALLEABLE CASTINGS

By Donald J. Reese
Development and Research Division
The International Nickel Company, Inc.
New York

THERE are about 2,800 gray iron and 110 malleable iron foundries in this country. With good team work between labor and management, an adequate availability of materials and manpower, and enough diversity in industrial needs to keep the various types of foundries busy, these foundries could produce about 1,500,000 'product tons' of gray iron and 100,000 'product tons' of malleable iron per month.

The over-all performance of the gray iron foundry industry was 830,000 product tons per month in 1946, and for the first three months of 1947, 1,043,000 product tons per month. Screening from these over-all performance figures, specialty items such as ingot molds, pressure pipe, soil pipe and fittings, railroad car wheels, and also the performance of manufacturing organizations operating foundries for their own needs to get closer to the supply line that means more to you, we find that the gray iron foundries shipped 342,400 tons per month for the first three months of this year. The peak of the gray iron industry backlog occurred last September, and at that time the ratio between unfilled orders and monthly production was 5 to 1. As of April 1, there was a decline of about 3% in unfilled orders and monthly production was 4.2 to 1.

For the first three months of 1947, the over-all malleable iron foundries averaged 75,743 tons per month. The 1947 rate shows an over-all gain over 1946 of 20%, with the captive foundries showing a 33% gain and the commercial foundries a 13% gain. The current ratio as of April 1 in commercial foundries between unfilled orders and monthly production is 6.5 to 1.

As we are approaching the warm summer months when there is a decline in foundry performance due to weather and vacation periods, it seems improbable to me that the availability of malleable iron castings will improve in the next several months.

One might deduce that if the captive foundries are improving their performance at a faster rate than the commercial foundries, that there should come a time when the load should ease on commercial foundries. At least I would subscribe to this reasoning, but apparently this is not to develop in the next several months, as one of the important captive producers of malleable iron is converting a malleable iron foundry to a gray iron foundry at the present time.

Buyer Cooperation

I would like to say that you as consumers of gray iron and malleable iron castings play an important part in the performance record of these industries. The two most important elements in the foundry process of manufacture are proper scheduling of parts for production, and production itself. As the foundry industry acts as your subcontractor, its scheduling is actually your scheduling. You could easily overlook the importance of proper scheduling if you did not realize that these two industries produce billions of competent parts and in hundreds of thousands of designs each year. For example, one malleable foundry produces 3,000 different designs for one of its many customers.

In your own manufacturing operations, and in the foundry as well, some parts are complex and may pass through many processing operations before they reach your assembly department. If you schedule Part A, which is simple to process, before Part B, which is complex to process, then your shipping schedules are going to be interrupted or you are inventorying unwanted materials. As the foundry industry is a basic industry it is continuously asked to interrupt its scheduling, to take Part X out of production and put Part Y in its place as Part Y is urgently needed.

I would hazard a guess that the difference between precision and interrupted scheduling would amount to more than 5% in foundry performance figures.

If your patterns are not rigged up for quantity production, are not kept in A-1 condition, or you are trying to make one pattern do where two would make it possible to meet your procurement requirements, then you are playing a significant part in foundry production performance.

The foundry process has made considerable progress in the past 20 years and its rate of progress is likely to be greatly accelerated. It is quite possible that increasing knowledge at the foundry level gravitates back to you in the form of a request to spend money on pattern changes. These changes may be intended to achieve better design or better production, or better dimensional tolerance, or freedom from distortion, etc. I would urge you to give your suppliers a fair hearing on requests of this type for you are intended to be the principal benefactor in the long range.

If you will compare raw material prices in *Iron Age* for 1939 and 1947 you will note that coke, f.o.b. ovens is up about 100%, pig iron is up about 50%, and scrap is up about 100%. These are not absolute indices for while the price of coke has increased the quality has decreased and more coke is now required. Scrap has also been upgraded and a foundry accepts today what it would have rejected in 1939. Two of the types of scrap in greatest favor in the gray iron foundry, prewar, were automotive cylinder scrap and steel rails. When scrap of this type is made available to a

INFORM-A-SHOW AWARDS

TWO bronze plaques were offered by the convention committee for the most informative exhibits displayed at the 1947 Inform-A-Show. The decision of the judges was announced at the banquet session, with the following citation:

"In advance of the Awards, the Committee wishes to commend most highly the magazine PURCHASING for its informative service rendered by means of its registration board and booth, which is typical of its untiring effort to advance the interests of the purchasing agents association and its individual members.

"By unanimous decision, the undersigned board of judges has selected as the most informative exhibits at the 1947 Inform-A-Show the following firms:

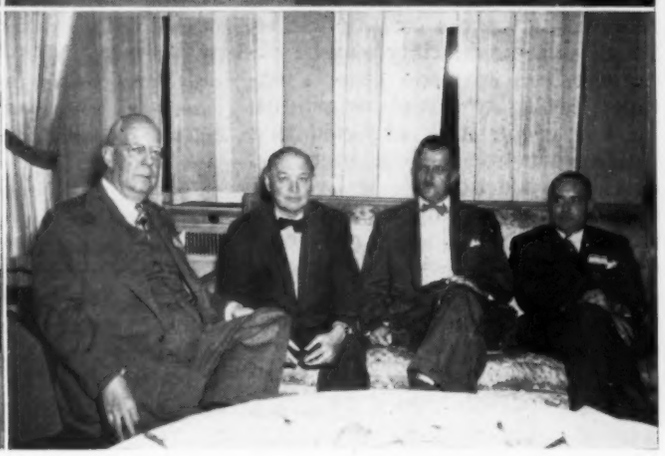
Consolidation Coal Company
Jenkins Bros.

Major General W. N. Porter
President,
Chemical Construction Corp.

William H. Oliver
Sales Manager,
Republic Steel Company

Henry Sildorf
Advertising Manager
G. M. Basford Company"

The winning booths are shown in the accompanying photographs, as well as the directory board that received special commendation. Also shown is the committee of judges, in session with Robert F. Banker, Chairman of the New York Inform-A-Show Committee.



foundry the price isn't quoted in the book. It hardly seems probable that the cost of basic iron will go down. I do not know how much of the recently established wage pattern, involving a 15% per hour increase, has been effected in the gray and malleable iron industries, but it would be my guess that much of whatever wage patterns are agreed to, still have to be effected in these industries.

It would be my opinion that the probable trend of casting pricing, for the next few months, is not likely to go down and could easily be forced upward.

Although I do not believe that the pig iron situation will offer any relief in availability over the next several months, I do believe the industries will be able to maintain their current melting tonnages.

The most strategic raw material has been, and probably will continue to be foundry coke. Although the coke producer has had parallel problems with other industries, he has the additional problem that even good coal mines are now producing poor coal because we have used the cream of our natural resources. A poor quality coke "as received" at the foundry means greater losses from wasteage in handling and greater consumption in the melting furnace. Wastage in one foundry that I visited on a particular type of coke was approaching 25%.

PIPE AND TUBING

By W. F. McConnor
Vice President in charge of sales
National Tube Company
Pittsburgh

AS pipe and tubing were very critical items for the war effort, production reached a peak of 6,400 000 tons in the last full war year of 1944. (The average of the 10 prewar years, 1931 to 1940, was 2,700,000 tons per year.) The figure dropped to 6,000,000 tons in 1945. In 1946 the production was 4,700,000 tons. It might be estimated that with a continued good product mix and no interruptions to production, a total of 5,500,000 tons could be attained for the year 1947. However, in view of the critical shortage of natural gas and fuel oil last winter, it appears that the industry will again experience shortages in this respect in the coming winter. Likewise some difficulty may be experienced in coal and other situations leading to some curtailment. In any event, it is expected that 1947 production will be in excess of 1946 production.

Insofar as product distribution within the pipe industry is concerned, the following breakdown for a typical 5.000,000-ton year would be expected from the historical pattern:

Standard Pipe	2,030,000 tons
Oil Country Goods	1,500,000 tons
Line Pipe	862,000 tons
Tubing Specialties (Mechanical & Pressure)	485,000 tons
Miscl., All Other	123,000 tons
	5,000,000 tons

Within a short time after V-J Day, August 1945, the collective demands for pipe and tubing were so greatly in excess of the available supply that some form of allocation or controlled distribution became necessary.

The procedure adopted by the National Tube Company was to follow as nearly as possible the principles of the Controlled Materials Plan set up by the War Production Board during the war period. Briefly, the pattern followed by us was to take the ingot tonnage available for pipe and tubing production and allocate this tonnage into standard pipe, oil country goods, line pipe and tubing specialties, in the same percentage proportions as obtained in a typical prewar period.

The end product was then distributed geographically and by industries in as equitable a manner as possible from a historical pattern. We were able to allocate all of the principal tubular products except large trunk lines. Because of complexities of sizes, quantities, intermittent purchases, etc., this product had to be handled more or less on a first-come first-served basis, endeavoring to maintain historical precedent regarding the proportionate spread between the oil and gas industry and trying to serve as many companies within a given year as possible.

It must be kept in mind that allocations had to be tempered with the mills' ability to produce within certain size ranges, finishes, etc., and with their ability to handle and ship, physically, the allocated pattern under the unusual conditions existing during the reconversion period.

Many persons inquire as to capacity figures for producing tubular goods. In general capacity figures of finishing equipment cannot be accepted unqualifiedly but must be adjusted to the reality of controlling conditions. However, the total capacity for pipe and tubing, as published by the American Iron and Steel Institute, was 8,300,000 tons in 1944; 8 000,000 tons in April 1945; and 7,650,000 tons as of January 1, 1947. The decrease in capacity is due to obsolescence and dismanteling of worn-out, high

cost production units primarily for the production of lapweld pipe.

There has been a tremendous demand for large-diameter trunk lines. We conducted a spot survey among the large oil and gas companies, covering pipe lines 20″ o.d. and larger which they had on order or desired to install within the next five years. The aggregate of this tonnage represented over 1 million tons a year which is 20 times the volume of this size pipe purchased for trunk lines in the 5-year prewar period. It is evident that the tonnage is beyond the ability of industry to produce in this period. The high ratio of demand to supply is significant for this commodity only, as the 20″ and larger trunk line tonnage in the prewar period was only 2% of the total pipe and tubing tonnage.

Oil Country Goods

Referring to the demand for oil country goods, it is significant that in the 4-year period of 1942-45, an average of 23,693 new wells were drilled per year, as contrasted with 30,221 new wells drilled in 1946, or an increase of 27%. The average depth of well drilled in 1946 was 8% deeper than in 1942. The drilling program projected for 1947 in number of wells and depth of wells shows a further increase over 1946.

While the supply of oil country goods does not equal the present demand, it is much more nearly in balance than the situation existing with respect to line pipe and refinery tubular goods. The high tonnage required in oil country goods has been accentuated by the nature of the demand. Casing of 80,000# minimum, which for the National Tube Company was 7% of the tonnage of total casing in 1942, increased to approximately 26% in 1945. This added burden has been largely due to increased well depths. In 1935 the first well was drilled to a depth greater than 12,000 feet while in 1946 there were 106 such wells.

Standard and Miscellaneous

In the case of standard pipe and miscellaneous line pipe, the market is so scattered and varied that it would be very difficult to conduct a survey of this demand. We do know that the average standard pipe distributor, for his out-of-stock business asks for more than twice his allocations. Stocks at the mills and in the hands of jobbers and distributors have been reduced to a minimum figure. It would take four months with the present output of standard pipe to rebuild mill and jobbers' stocks to a prewar ratio commensurate with present production, if we did not ship a single foot of pipe to any consumer in that period.

There are a few exceptions where the demand is declining. For example, high-alloy tubing has been readily available at good deliveries for some time. The production of drill pipe is beginning to come closer to the demand.

There is a trend toward the lessening of the gap between demand and supply in the case of cold-formed mechanical tubing. This latter, however, is really only a trend, as comfortable backlogs still exist and deliveries are somewhat extended.

It is questionable whether the sustained demand over a long postwar period would justify increased tubular capacity. The actual figures indicate that industry on a normal basis, with equipment in good shape, unhampered by strikes, shortages, etc., could produce about 5½ million tons per year with a good peacetime product mix. This is 48% over the 1937-1940 average consumption.

The high costs of construction considered against the low profit position of pipe and tubing are not conducive to expediting further capacity increase. Our own program, which we had hoped to carry out in two years has been delayed by many shortages, strikes, etc., and we shall be most fortunate if the project can be completed by the end of 1948.

Black Market Sales

Several persons within the industry have investigated some of the many wild rumors regarding the large quantity of pipe and tubing sold in the black market and have come to the conclusion that the actual figure is a very insignificant percentage of the total tubular tonnages.

When you consider that the bulk of our product is sold under allocation, our sales people have a close check on this tonnage and where it is going. To cite one case that occurred a few months ago, certain offers were broadcast to the trade offering buttweld pipe at $14 per ton over our carload consumer price. As a test case, acceptance of these offers were made by a number of jobbers and not a single order was actually taken.

Export Tonnage

In the case of export, the tonnage which the industry shipped in 1946 is the same as the prewar percentage bought in the free, prewar market. Actually the volume involved was less than 7%, and in our case, over 90% of this tonnage was shipped to American companies operating in South America and the Near East. Our export allocation for 1947 is on the same basis.

THE LEAD AND ZINC MARKETS

By Irwin H. Cornell
Vice President and Sales Manager
St. Joseph Lead Company
New York

Current production is substantially equal to essential demand; prices may recede by the end of the year, but in zinc this will depend on the continuation of subsidies

UNTIL 1913, St. Joseph Lead Company sold no metal direct to consumers or fabricators. Our business was done through factors and brokers and, when we sold through factors, we never knew who used the metal.

Thirty five years ago we started selling direct to the trade, and we have never regretted that move. During this period, St. Joe's policy has been guided by certain definite principles:

(1) To sell direct to consumers, never to middlemen or speculators.

(2) Never to sell at a fixed price for shipment beyond the month following the month of sale, and to sell for cash.

(3) Where possible, to sell as we produce and not to speculate in the market at the expense of our customers.

(4) To sell part of our output on contract at the monthly average, as quoted by the *Engineering and Mining Journal*. When an emergency arises, if a consumer with a long term average price contract has over-estimated his requirements, we have been usually willing to cancel the sale. Otherwise, we would be forcing this company to re-sell and would be defeating our own policy of not having our lead get in the hands of middlemen. No one should make a mistake in buying for shipment 30 days ahead but, should he do so, we do not cancel, but help our customer to sell through our selling organization.

The market price in the United States is not set by a metal exchange, but by the prices received each week by the major sellers and consumers as ascertained and reported by the *Engineering and Mining Journal*. In normal times the prices quoted on the British Metal Exchange had great influence on our own market. Today the British Metal Exchange is closed and the prices quoted in London are in blocked Sterling and do not represent what a seller could receive in dollars when translated at the quoted exchange rates. Lead and zinc are staples, and in any staple the law of supply and demand must govern. If more is being produced than is necessary to supply current demand, the price will fall, and if more is needed than is being produced, the price will rise. Equilibrium will be reached by increased or reduced production, and increased or reduced consumption.

The closer we are to our customers, the more useful we can be to them. Their problems about lead should be our problems and, unless we can offer good advice about the market, about physical and chemical qualities and requirements, we are not fulfilling our obligations to the very people we expect to buy our metal.

I well remember a long-term contract we had many years ago with one of our large customers. Although industry had then headed into a depression, we maintained our high production schedule to fulfill the contract, and the customer kept on buying because of his obligation under it. The result was that, after the contract expired, that customer was out of the market for almost two years and we started accumulating a large inventory of unsold lead. If we had been as close to this customer as we should have been, we would have known that he was not using all the lead he was buying, and shipments for the last six months could have been spread over a longer period.

There is, of course, considerable difference in the quality of lead produced by the various refineries. One can hardly say that Brand A is better than Brands B or C, but one can say that Brand A is better for some purposes, while it may be worse for others.

The first World War brought a huge demand for lead. The War Industries Board was formed under the able leadership of Mr. B. M. Baruch. No ceiling price was ever fixed. Mr. Baruch asked the Lead Industry committee what price would produce the tonnage required for war purposes. The Committee, headed by Mr. Clinon H. Crane, replied 8.05 New York—and that was where the price stayed. All lead was allocated by the Industry Committee and the price was policed by that Committee.

The experience of World War I taught the industry the value of statistics. Before that date, we never knew enough about figures of production or consumption, scrap intake, exportable foreign production, etc. Before War I, Germany was the principal source of world statistics, and to the U. S. A. they came late. The reports of the Metalgeselschaft were good — but tardy. In those days, the London Metal Exchange quotations had a great influence on the New York price—especially if the London price was below New York price by a figure somewhere near the duty. The London price was very variable and closed at a different figure almost each day. A seller's first duty in

Address at the 32nd annual convention of the National Association of Purchasing Agents, New York, June 4, 1947.

the morning was to get the London price before he answered the telephone. It has always seemed to us that a fluctuating metal market was a curse to producer and consumer, and should be avoided as far as possible. Producers dislike it, to fabricators it is anathema, for they continually have to change all the price lists of their many products, and consumers have asked why the price cannot remain steady. I don't know how many times I have been asked, "Why can't a price be established in January that can be held for the entire year, so that we can estimate what our customers will have to pay for lead products for the whole season?"

With the idea that knowledge would be helpful in maintaining an orderly market, the American Bureau of Metal Statistics was formed by Mr. Crane in 1920, and "The Blue Book" is well known to all interested in non-ferrous metals.

In 1928, Mr. Crane also proposed the formation of the Lead Industries Association, in which he insisted that fabricators and consumers, as well as producers, should be eligible for membership. As far as I know, this industry association is unique in that its consuming and fabricating members have always greatly outnumbered its producing members, and full information covering production and sales is given to producers and consumers alike.

As a rule, a producer of lead and zinc who regularly contacts some 200 to 300 customers, should have a better feel of the market than a consumer who contacts half a dozen producers. Therefore, if I were ever a purchaser of large quantities of lead or manufactured a product of which lead was an important component, I would want my company to join the Lead Industries Association and subscribe to the A.B.M.S. reports.

Thank Heaven, I don't face the danger of becoming a buyer of any lead (unless perhaps sinkers) at my time of life, as I believe the problems of procurement are tremendously more difficult than those of marketing, and certainly the war years must have been beyond measure difficult, troublesome and exhausting. And right here, I wish to express my deep appreciation of the courtesy and consideration you gentlemen have shown to your suppliers during this long period of a seller's market. Perhaps you will no longer hear a seller say, "Why I gave you 150 tons of lead last month!"

During the second World War, we worked unler the O.P.A., a hard working group withal. The price of lead was held too low and too long. It may be truly said that mining companies, as well as the lead consumers, were subsidized—but I earnestly hope we will never suffer from that disease again. In 1946, while lead prices were advancing abroad, the Lead Industries Advisory Committee urged the O.P.A. to increase the selling price of lead in this country, with the idea that pressure under the ceiling was increasing and, if it was held down too long, the market would explode when controls were finally taken off, and this is just what happened eventually. Keeping the ceiling price down also postponed the starting of new properties by producers and it encouraged the use of lead instead of substituting other commodities, as is now occurring under the present 15¢ price.

The lead market is a very sensitive market, for the reason that a very large proportion of the lead sold is made by custom smelters, who buy their lead ores and concentrates from independent miners and who are interested in obtaining a smelting profit. If a custom smelter is unable to sell its intake, then it is apt to cut the price. A surplus of 1,000 tons of lead in one month might be enough to cause a reduction in the price. In fact, I have seen a surplus or a shortage of 400 or 500 tons put the market down or up over night.

In 1946, we estimated that about 900,000 tons of lead were consumed in the United States. During that year, the consumption was held down by the available supply, which was in turn held down by strikes and the O.P.A. ceiling prices. In 1947, the available supply will be at least 200,000 tons greater, and it is our opinion that in the not distant future, under the impetus of the present 15¢ price, the supply of lead will equal the essential demand.

In March, 1945, estimates were made by the Bureau of Mines that the known lead reserves of the United states would not last more than twelve years. This estimate, I believe, was made when lead was selling at 6½¢ or less. On the present basis of cost of producing lead, I venture to say that at 6½¢, U. S. lead reserves are practically non-existent. On the other hand, at 15¢ lead, reserves are being rapidly developed in the U.S.A. and all over the world. It is quite surprising how many old dumps and tailing piles are now being retreated. Reserve figures are of little value unless selling price and production costs are given careful consideration.

My fear of the 15¢ lead price is that substitutes will be found for lead and some of its most important outlets will be lost for good. Lead has competitors in addition to zinc and aluminum, such as rubber, plastics, glass, ceramics and many more. American research laboratories are full of clever and resourceful engineers and metallurgists, and many of these men are devoting considerable time to the study of substitutes for overpriced commodities. Lead, I feel, is overpriced at 15¢. Although in the next decade the price relationship between non-ferrous metals may not be the same as it was in the last decade, it is interesting to remember that lead usually did not cost more than 50% of copper, has usually sold at about the price of zinc, and has never before equalled the price of aluminum. Today the price of lead is 15, copper about 22, zinc 10½, and aluminum 15. It may be that the price relationship of lead to copper and zinc has changed permanently.

In making predictions about the price of lead, I am giving my own opinion. Some of my friends and associates are not in complete agreement with me. In fact, there are probably many people in the producing and consuming industries who do not agree with me.

It seems to me that it is fairly self-evident what is going to happen in lead. The price of 15¢ will increase lead production and curtail consumption to such an extent that there will be an over-supply and the price will go down. On April 30, 1946, Mr. Crane addressed the Mining & Metallurgical Society of America on the subject of lead and stated: "In a free market, I believe the parts of the world outside the Russian sphere can produce enough lead to take care of all our essential needs and, in fact, more." I believe this prediction is in the process of becoming a reality.

The hard question to answer is, however, when will lead be lower in price—this summer, next fall, in 1948, or not until the new large mines start operating late in 1949 or early in 1950?

There are many signs that production and consumption are approaching a balance. For instance:

1st. Today over 90% of the consumers are able to buy all the lead they need.

2nd. Premiums on primary and secondary lead have almost disappeared.

3rd. Producers and consumers, alike, are afraid of high inventories. Producers' inventories were almost 200,000 tons on the 1st of this year. This figure can be cut 50%.

4th. During the last thirty-seven years, I only remember one time when the London price exceeded the New York price, and that was in the winter of 1937, just before the drop in price in April of that year. The U. S. price reached 7.75 on March 10th and dropped to 6¢ on April 7th. Today the London price is 90 pounds Sterling per gross ton. Translated into dollars at the published rate of exchange, this amounts to over 16¢. When the price went up to this figure in London, the U. S. price did not follow. The present quotation is almost 37 pounds Sterling higher than the previous all-time-high of 1920. However, what is the real value of Sterling in respect to the U. S. dollar? At $4.02 to the Pound, the price of lead is over 16¢; at $3.00 to the Pound, the equivalent price would be around 12¢.

5th. We know today that other commodities are being substituted for lead in several industries.

6th. Economists tell us today that industrial activity is slowing up in many lines. We have noticed it more in zinc than in lead. However, lead buyers are much more price conscious than they were, and sales resistance is growing.

7th. We estimate that the U. S. supply of lead will be 600,000 tons in the first half of 1947. This includes imports of ores and pig lead, domestic mine production, secondary lead production from scrap, reduction of stock in the hands of primary smelters and refineries, and Government stock liquidation. If the monthly supply of 100,000 tons should increase, or even hold up to this figure during the third quarter, I believe the supply might equal the demand this summer.

But there is another side to the lead supply and demand picture:

1st. By June 1st, the Government stocks may be down to about 9,000 tons. If Washington continues to liquidate its stocks at the rate of about 8,000 tons a month, the supply will be exhausted by the end of July.

2nd. In the three summer months, smelter production is usually lower than in any other quarter of the year, because of hot weather at furnaces and bag houses.

3rd. In the Rocky Mountain area, many underground men seek surface jobs in the hot weather and the supply of drill men and muckers is reduced.

4th. Vacations at mines and smelters reduce production, but this cut may be about offset by summer vacations in the lead fabrication and consuming industries.

Although I have suggested that you should make your own time table, you may be interested in my time table, which is: Unless we have a drastic cut in the use of lead due to a recession in business, the present price of lead will continue through the third quarter, as the reduction in supply will be largely compensated for by a reduction in demand. In the fourth quarter, production should pick up again, additional ores and concentrates brought out by the high prices ruling in the second and third quarters of the year should be reaching the smelters from the U. S. A. and other parts of the world, and unless there is an expansion of business during the last quarter of the year, it is quite possible that the lead price will go down before the end of this year. 1948 is another year, but I believe that the average price for '48 will be closer to 12¢ than 15¢!

St. Joe also has a stake in the mining and smelting of zinc and is now marketing over 3,000 tons per month from its Josephtown plant, and over 3,000 tons additional of Bunker Hill 99.99 plus zinc, made by the Sullivan Mining Company in Idaho. The total of around 6,500 tons per month, is less than 10% of the U. S. smelter production. Increase in our Pittsburgh refinery capacity some time this year should bring up our overall supply, including Bunker Hill Zinc, to about 8,500 tons a month.

The price of zinc, 10½¢ St. Louis for the Prime Western grade, seems low, if anything, when compared with the lead price. The Government supply position of about 128,000 tons of slab and about 275,000 tons of zinc in concentrates, is quite different from its supply of lead.

The strength of the market will, of course, be affected by the Tri-State or so-called "Joplin District" production, and the output there cannot continue at the present rate unless the premium price plan is extended beyond June 30th, or some other plan of subsidy is adopted. The price structure of zinc is therefore much more complicated than that of lead. Today, all grades of zinc are based on the price of Prime Western. Brass Special, Intermediate, High Grade and Special High Grade Zinc sell at certain premiums over the 10½¢ St. Louis price for Prime Western. Today Prime Western zinc is in the shortest supply, and regular High Grade is the most abundant. And yet an oversupply of High Grade might not affect the price of Prime Western. It would seem to me that, if the

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INDUSTRIAL TEXTILE FIBRES AND FABRICS

Many desirable properties are available in the new fibres, and in combinations of fibres, but usually at the expense of other and equally important qualities

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By John F. Hagen
Assistant to the President
Callaway Mills, Inc.
New York

THERE are already a multitude of new fibres, practically all of which, however, are higher in price than cotton. There are many new fibres on the way.

There is an increasing tendency on the part of technical men in industries in which textile yarns and fabrics are the reinforcing membranes or the supporting base, to specify many qualities for each yarn or fabric which they have found are required for the best finished product. This tendency is accentuated by the fact that the technical men have been given new tools and new knowledge with which they can now more definitely determine what qualities are required for best end use product results.

In many of the market talks by textile technologists where the so-called battle of the fibres has been discussed, there have been predictions of getting fibres tailor-made to fit any and all requirements. I doubt that it will ever be possible to build into a single fibre all of the characteristics required even for some of the large volume standard products, and a compromise is necessary.

Technical men now are not so sure that simply specifying tensile strength will give them what they want. It is not the point at which the yarn or fabric is ruptured that they need, but adequate strength within the working range of the product, and the breaking strength may be misleading. But that's not all. They want more or less impact strength and they require varying degrees of elongation under load, depending on end use, but they must always have full recovery upon removal of the load. Deterioration by heat, acids, alkalies, and sunlight or oxidation, or shrinkage due to temperature and moisture, or high dielectric qualities and the varying degrees of absorption of water or dyestuff are also essential factors. The flexing ability and the adhesion properties of textile yarns and fabrics are very important.

Not all of these or other required properties are due to the inherent characteristics of the fibre. Many of them must be obtained in the manufacturing operations.

Cotton has more of the essential qualities for industrial products than any other fibre. It is rugged and will withstand hard usage. Many of the additional required characteristics can be obtained in the manufacturing operations by varying the amount and direction of twist, and the number of plies and sizes of yarns. Cotton yarn can be stabilized to a very low residual elongation, or, if required, it may have quite a substantial amount of elongation. Cotton fabrics may be stabilized to a very low shrinkage condition so that there is very little subsequent change in dimensions, and cotton fabric is the standard for launderability by which all other fibre fabrics are appraised.

Cotton is a large volume, low price fibre. Of all domestic fibre used, 68% is cotton, as compared to 12% for all rayons, 10% for wool, and 8½% for jute. All other fibres, including nylon, silk, and aralac, account for only 1½%.

Cotton does have its shortcomings, as do all other fibres. It lacks the resilience of wool and it deteriorates under prolonged dry heating conditions.

Rayon lacks elasticity, is difficult to bond with rubber, and loses

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Address at the 32nd annual convention of the National Association of Purchasing Agents, New York, June 2, 1947.

MORE COPPER IMPORTS NEEDED

By C. Donald Dallas
Chairman of the Board
Revere Copper and Brass, Inc.
New York

To stabilize a high and erratic market, and satisfy increasing demands, users of copper should have free access to world resources

A little more than a month ago, President Truman signed a bill that averted a crisis in American industry. This legislation, now a law, was the Patterson bill providing for suspension of the $80-a-ton excise tax on raw copper until April 1, 1949. Today, by virtue of the Patterson act, American manufacturers are able to buy copper in the world market without having to pay an $80.00 a ton premium—a premium that would have forced many fabricators to cut back production and others to go out of business. It would have meant 28¢ a pound for foreign copper against 24¢ we are paying today, or a premium of $80,000 for 1,000 tons.

If we hopefully look to the United States for all the raw materials we need, we must pin our faith on new and highly scientific methods of extracting pure copper from low grade ore. For our known supply of copper is near exhaustion. Today the experts tell us that all known copper reserves will be out of the mines and in the mills of the fabricators in twenty years or less. Elmer W. Pehrson, chief of the economic and statistics branch of the Bureau of Mines, has estimated that American production can hold at a million tons a year for ten years and from that point on there will be a steady decline to exhaustion. And I, as a fabricator, will estimate that America can use a million and a half tons a year for the next ten years. You don't need a slide rule to figure that answer.

For the copper fabricator, the situation is not a happy one. Our activity depends entirely upon the supply of raw material. In a decade, we have moved from the position of a nation with copper to spare, and who wants it, to the position of a nation that faces exhaustion of its natural resources within the next two decades.

With the producers of copper, we share the hope that modern technology will develop new and astonishing devices that will locate hidden lodes of copper. We can also hope for new methods of extracting pure copper from low-grade ore at an economical cost. Unfortunately, two World Wars, a long depression, high taxes and S.E.C. regulations have seriously curtailed the exploration and development work of mining operators and as a result, there is very little new copper in sight domestically, or in fact, around the world.

In the meantime, we must have more copper if our industrial development is to march on. Our domestic mines will continue to supply the bulk of our copper for many years. But, we must look to the mines of the world . . . in Chile, in Peru, in Mexico, in Canada, in Africa—wherever they are—for the extra raw materials we need. Not only for the needs of fabricators and consumers, but for the stock pile we must have for our defense.

The biggest problem facing the independent fabricator has been that he was competing with producer-owned fabricators and that there was not nearly sufficient raw copper to go around. This shortage of copper plus the fact that imports of foreign copper were prevented by a 4¢ excise tax, meant that we and consumers in general were just out of luck except for a small percentage of domestic production.

Because of this situation, a group of fabricators and consumers went to the Congress for relief. We got relief in the shape of a two-year suspension of the tax on copper. The two-year suspension, I believe, has paved the way to stabilization of a market that has always been too erratic.

We who depend on copper, do not count the Patterson bill as a complete victory. Twenty-two months from now the four-cent-a-pound excise tax again becomes effective. If by that time, American mines can produce enough copper to supply America's needs, I'll be among the first to say keep the excise tax in effect. But if our domestic production is far behind our demands as it is today, then we'll have to fight a return engagement in Washington.

How much copper can we expect? Our current position as a buyer in the international metal market isn't a good one. Even now, with the excise tax suspended and our buyers active wherever copper is produced, the foreign producer knows that many of us who are customers today may be out of the world market 22 months hence if the excise tax again becomes effective. The foreign producer cannot help but regard us as transient customers.

As of today, the Chilean producers, American owned, have diverted approximately half of their current production to the United States. This should give us about 25,000 tons or half of what we need. The essential balance must come from scrap intake, and scrap is now coming out freely.

The question of *when* we'll get this metal has been partially an-

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Address at the 32nd annual convention of the National Association of Purchasing Agents, New York, June 4, 1947.

COPPER SHORTAGE IS TEMPORARY

By Louis S. Cates
President, Phelps Dodge Corporation
New York

Domestic resources are ample to meet demand in the long run, provided tariff protection is restored to permit continuing development

THERE is no denying that we are feeling the pinch of a copper shortage today. I do not believe the present stringency will continue. Many insist that the level of the present day demand is permanent and that the domestic sources which in the past have never failed to meet our needs can no longer do so. They argue that this combination of persisting enormous demand and dwindling resources means that we are a "have not" nation, and that we must depend in the future on substantial imports. Some even insist that we should depend practically 100% on foreign production with which a large proportion of our mines cannot profitably compete. As part of their argument they say that the metal thus saved in the ground at the expense of foreign production would serve as a stockpile in the event of a future national emergency. I subscribe to none of these arguments.

Based on War Production Board published figures of copper allocated to war use and essential civilian requirements during a two-year period, July 1, 1943 to July 1, 1945, new copper allotted to and consumed by the industrial economy amounted to only 290,000 tons annually. Compare this to our yearly consumption of new copper which averaged 585,000 tons annually during the 22 peacetime years 1919 to 1940. Or consider the 1936 to 1940 yearly average of 757,000 tons.

During the war the civilian economy, while devoting itself to war work, nevertheless employed in this work the same plants, railroads, light and power lines, telephone and telegraph systems and many others normally used in peace. These had to go along on a much restricted replacement of worn materials and a denial of their ordinary peacetime expansion. In addition to the usual replacement for such items, the normal need for civilian goods and services had not lapsed. It was merely accumulating and is here today.

There is nothing startling nor disturbing in this working out of factors precisely as they should work out. The danger is that the current high level of demand will not be recognized for what it is, namely a non-recurrent bulge caused by the five year backing up of normal requirements that in peacetime would have been satisfied as they arose.

When the pent-up demand is satisfied and consumption is once more determined by normal requirements alone, what will that consumption be? The highest yearly average consumption sustained for ten consecutive peactime years was about 11¼ lbs. per capita. Even at this maximum, our normal requirement for newly mined copper would be 850,000 tons per year, which is within our capacity to produce at home.

No one questions the need for imports to supplement our domestic output until the backlog is satisfied. But the notion held by many that the import tax should be suspended for an extended period of time or revoked altogether, because of the belief that present conditions are permanent, is dangerous. For the next year or possibly a little longer our temporary large demands must be met from both domestic production and from foreign imports, but thereafter our normal requirements can and will be provided by our own mines. However, the United States mine producers can meet our future domestic needs only if the tariff is reestablished promptly and at the proper time. The American miner must be afforded tariff protection against cheaply produced foreign metal and he must have the assurance given him by such protection that he can safely proceed with his search for further resources that he can efficiently utilize the reserves already developed.

You may have heard certain estimates of our present domestic copper ore reserves in terms of their life at the present rate of extraction. These estimators point to a period of about 30 years and conclude that we will be bankrupt at the end of that time. Even now they say that we are actually a partial "have not" nation. These persons completely discount our American engineers' technological ingenuity for the devising and perfecting of new methods for finding ore reserves now either completely hidden or barely visible at surface.

The American engineer has in the past and can be counted on in the future to meet and solve mining and metallurgical problems by the working out of new and cheaper methods and improved processes. Mining history is replete with instances in which the application of courage and inventiveness has made commercial, ore reserves which hitherto had been considered worthless.

To make these accomplishments possible we must be assured of a reasonable copper price and we must be guaranteed the elimination of any threat that a flood of foreign metal will disrupt our domestic cop-

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Address at the 32nd annual convention of the National Association of Purchasing Agents, New York, June 4, 1947.

PAPER SUPPLY NEARING BALANCE

By Cola G. Parker
President, Kimberly-Clark Corporation
Neenah, Wisconsin

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Except for newsprint and tissue, supplies should be adequate by the end of 1947; prices are high because costs are high; no major changes likely

THE United States is not only the largest consumer of paper and board but it is also the largest producer. That may not be too much comfort to a purchasing department when it seems impossible to locate a few pounds or reams needed for a rush job—but it is important in its bearing on my text.

In the first *quarter* of this year the United States' mills produced almost 5,200,000 tons of paper and board—a tonnage larger than any *year's* production by any other nation. That is at a rate of almost 21,000,000 tons for the year as contrasted with total production in 1946 of about 19,200,000 or almost 10% increase. It is also in contrast with an average production 1935-39 —which our government persists in using as a yardstick—of about 12,000,000 tons. The present rate of production, therefore, is an increase of almost 75%.

In considering the supply available in our markets, however, we must remember that in one major grade—newsprint—we are primarily dependent on imports, principally from Canada. In fact, our domestic production of newsprint is substantially less—at least 20% less—than it was in 1935-39. Thus, the increase I mentioned is all in other grades. At any rate, if we add to the production I have mentioned a hoped-for import of 3,700,000 tons of newsprint, it will be seen that there is a possible supply closely approaching 25,000,000 tons for the entire year. Such a quantity would permit a consumption of 350 lbs for every man, woman, and child in the United States—a rate of consumption never heretofore attained anywhere, not even in this enlightened nation.

When apparent demand (and I stress *apparent*) so far outruns supply—as has frequently seemed the case in our industry both to buyers and sellers—balance may seem far away, but it can be attained in any of several ways. If demand remains constant, by increased production. If demand drops, by maintaining or somewhat increasing production; but if demand continues to increase, balance can come only by *greatly* increased production. Overall the paper industry is apparently following the latter course. Curtailment (primarily due to manpower and raw material shortages) was, of course, the order of the day during the war. But immediately that control orders were relaxed—down from the pigeon holes came all the plans that had been gathering dust and cobwebs and many new drawing boards were purchased and manned.

Already the results are apparent. Production in 1946 was about 1,800,00 tons more than in 1945—and exceeded the previous peak year by almost 10%. The first quarter of 1947 indicates a further increase in production of close to 10% for the year. Although the operating rate in terms of theoretical capacity is up only about 3% as capacity itself has been enlarged with the result I have stated. Plans for further enlarged capacity—which isn't confined to wholly new production units—are being rapidly pushed to conclusion and granted (1) available manpower willing to work, (2) available raw material, and, (3) continuance of demand, I see no reason to doubt ability to continue production at the first quarter rate subject to seasonal variations.

As to labor, industrial relations

in our industry have usually been stable and there is no indication of any marked change in that respect. While there is some shortage of skilled workers here and there frequently requiring overtime that would be justified were prices not reasonably adequate, plus the training of new people which doesn't aid efficiency—shortages are not such as *materially* to hamper production. I see no reason to expect labor to be a bottleneck.

As to raw materials—pulpwood seems to be in adequate supply. Inventory is at a peak and is still rising in practically all regions.

Domestic production of pulp is running close to a 12,000,000 ton rate. Canada is shipping at a rate of 1,300,000 tons. Scandinavia is the great unknown. Sweden is reported to be scheduling her wood cut at a rate only 70% of 1937, her previous peak. Since her own price controls have been relaxed there is more hope of getting our normal proportion of her total exports even as against higher prices elsewhere in the world. If she were to ship us at 70% of her 1937 exports to the U. S. it would mean at least 700,000 tons. If we anticipate that Norway and Finland can make up what we might discount on the part of Sweden, it is not unlikely that there will be available 700,000 tons of overseas pulp. Thus, total supply may well approximate 14,000,000 tons, and allowing 600,000 for nonpaper uses which are constantly expanding, there would be available about 13½ million tons, which would support the production of more than 21,000,000 tons of paper and board which I earlier indicated could be produced here.

Even with this supply, however, there may well be dislocation. The figures indicate that integrated mills are using more of their own pulp which is, therefore, no longer available as the market pulp for converting mills. The latter, therefore, may well be affected by fluctuation in the volume of imported pulp. On the other hand, changes in market demand for paper and board, if it results in integrated mills having available pulp, might result in sales of surplus pulp and aid in restoring a balance.

This brings me to the question of demand. It is axiomatic that a balance between supply and demand depends on sustained general business conditions. The paper industry is a service industry dependent upon other industries and business in general for its volume. Paper production is closely related to the production of many nondurable goods items. In several of those industries there are signs of slackening production. Even so, there are also signs of a large volume of purchasing power for these same lines which would be released at lower price levels. The rapidity with which other industries meet this situation, and whether in our industry we reach a balance or go beyond it to a position of excess supply. In the light of what I have advanced as to total potential supply I expect a balance in our industry in the over-all volume of supply and over-all volume demand by the fourth quarter of this year.

What I have said applies to the industry as a whole. But the story would not be complete without some descent to particulars.

Paper board—with the growth in packaging with which you are all familiar—has had for some years the sharpest upward trend. Per capita consumption has multiplied more than four times since the low point of 1920-21. Production has been above the trend line for more than six years and it is now apparently nearer the trend line than at its peak in 1941. Over-all its capacity and production has continued to grow—major new capacity is now under construction. Statistically it would seem more rapidly approaching a balance than some other groups.

Book paper hit its peak at the end of 1941 and early 1942 and has been below its trend line until last year. In part that was the result of war controls. Its growth has been much more gradual. Maximum per capita consumption was around 30 pounds. In 1946, however, it was only about 28 pounds, although total use increased. It seems unlikely that book paper will reach its saturation point this year.

Newsprint is a story by itself. Except for the United States, Canada, and Scandinavia, the latter two relatively small consumers, in total tons, the world is starved for newsprint. I have yet to encounter a publisher with enough newsprint. Canada is producing at top rate. But world capacity has been seriously reduced or dislocated. Barring a major recession, I can see no possibility of reaching the saturation point in newsprint for several years to come.

In the fine paper field growth has also been slow. But after a long period of not too great change, per capita consumption jumped 50% since 1940. There can be a balance this year if the converting mills get adequate pulp. But in part this will be dependent on how much is exported. Export demand continues strong with few if any signs of

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Address at the 32nd annual convention of the National Asscciation of Purchasing Agents, New York, June 4, 1947.

slackening, and if exports are increased, attainment balance could be somewhat delayed.

With wrapping paper, present estimates indicate that there will be a balance before the year end. This is somewhat related to the board situation due to flexibility of operation and the ability to switch machine production to different grades.

However, in the tissue field, it is much more doubtful that a balance will be reached this year. In part this is the result of introduction of new products, such as facial tissues. Developments of this type have rendered questionable comparisons with previous periods. Per capita consumption of all tissue is three times what it was twenty years ago, but the market is still insatiable. In this particular field I have no expectation at all that such products will be in ample supply this year.

And now, "For How Much?" I start with certain assumptions, or preconceptions; later you may call them prejudices.

First of all, we are in a period of price dislocation. In view of ten years of depression with government policies retarding instead of speeding recovery, followed by a total war economy, it would be a miracle if we didn't have dislocation.

Second, from a long-range standpoint the price level, is too high. That it will be lower is beyond question. That we have more than a modicum of inflation in our system is beyond all doubt. Again it would be a miracle if there were not. With a Federal debt of almost 269 billions and an executive budget of 37.5 billions, would anyone seriously contend that we would be solvent if we attempted to operate in a 1926 price level when we had a debt of but 20 billions and a Federal budget but 10% of what the Administration proposes?

Third, wages, or at least wage rates, have become, even more than taxes, the most inflexible part of all manufacturing costs. And to these must be added the new and mounting structure of items which because they are measured by pay rolls, are further encroachment upon flexibility in price determination; such things as social security, unemployment compensation, vacations with pay, holidays with pay, etc., etc., not to mention shorter and shorter hours and higher and higher overtime rates. Since the studies of national income seem to indicate that the nation's pay rolls account for from 67% to 73% of the whole national income, all of which is a part of somebody's cost, the room for movement of prices has been seriously circumscribed.

Fourth, our industry as a whole has operated, ever since it really cut loose, month after month at more than 100% of 6-day, 24-hour a day capacity. It would seem hardly likely that it was in a position to cut prices and broaden the market, make more goods and thereby maintain profits by a smaller margin on more units?

Fifth, in a major price adjustment period no one industry can expect to hold its prices unchanged.

Sixth, I happen to be numbered among those who believe that with the greatest production machine the world has ever seen, with the greatest consuming public anywhere, ever, with wants and desires that are practically limitless, and with over-all incomes substantially matching those wants, we can nevertheless talk ourselves into a *needless* depression. But I am not going to borrow that particular trouble in stating my conclusions or base my estimates on its happening.

Now with that background, I would like to make a categorical statement. Profits over-all in our industry are not too high; and if profits are not too high then it seems to me axiomatic that prices in relation to present costs are not too high. That is because profits are the last residuum from prices after all other elements of the production process, including the parasites who infest the tax roll, have taken their cut.

Another thing I think is too frequently overlooked. The producer's dollar doesn't buy any more than any other person's dollar. When I say that over-all profits are not too high and therefore prices in relation to costs are not too high,

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WOMEN IN PURCHASING

For the first time in N.A.P.A. convention history, women purchasing agents had a place on the program as a distinctive group in association affairs and activities. Doris Williams Diedrich, of Kirkeby Hotels, presided at the meeting and round table discussion. In the group were delegates from New York, New Jersey, Cleveland, Pittsburgh, Chicago, and Washington, D. C. The majority of the local associations of N.A.P.A. now have women members, and regularly organized women's groups have been active in conjunction with the associations at Chicago, San Francisco, Washington, D. C. and Seattle.

COAL IS THE BASIC FUEL

Immediate outlook for supply and price depends largely on the outcome of labor negotiations; present stockpiles provide a reasonable margin of safety; producers hope to hold price line

● ***By H. B. Baird***
Vice President, Koppers Coal Division
Eastern Gas and Fuel Associates, New York

AT the outset I wish to make three basic generalizations: First, there is no uncertainty in the long range view about adequate supplies of coal, in terms of the nation's over-all requirements. Our supply of coal is, for all practical purposes, virtually inexhaustible. And our facilities for its production are adequate to meet any conceivable level of national need.

Second, coal is not going to be displaced as the major source of the nation's energy and fuel requirements.

Third, the price of coal has not, and in the future is not likely to advance unreasonably in relation to the increase that has occurred or may hereafter occur, in the general price level.

Any estimate about the future course of business in general and the coal business in particular necessarily rests upon various assumptions. If these assumptions are upset by subsequent events, then the forecast may turn out to be all wrong. Here are the assumptions upon which I am proceeding:

First, that the country is going to pass through a further period of downward readjustment of prices during the next year or year and a half; that such a period is bound to produce some decline in the total volume of business; that, following this period, we should enjoy from three to five years of good business.

Second, that the present rate of overseas export of coal, of from 25 to 35 million tons annually, will continue for two or three years.

Third, that the abuse of privilege on the part of labor leaders will be stopped and that we will enjoy reasonably peaceful labor relations during the years immediately ahead.

I entertain strong hopes that we will escape any nation-wide bituminous coal strike in July, or at any other time in the years immediately ahead.

Mining coal by machine, whether underground or on the surface, poses questions of cleaning and preparation and, frankly, the construction of cleaning and preparation plants has not kept pace with expansion in mechanization underground and increase in strip mining. We have to face the fact that much coal now marketed has suffered a decline in quality. More economical methods of cleaning are now being studied. More preparation plants are on the way.

The steadily rising costs in coal production, plus the increased cost of rail and water transportation, are placing more stress on quality than ever before.

The consumer at any location involving considerable freight, can well afford to pay for quality. The price differentials between high and low ash coals, which once existed, will be found wholly inadequate to meet the new conditions. Thus it will be seen that these factors are bringing about a more pronounced division between coals of varying quality, and it will be increasingly difficult for the lower-class coal to fulfill the requirements of high-class coals except with a wider differential in price.

Then it must follow that with reasonably normal business conditions, the demand for coal of high quality will tend to stabilize this segment of the market because the supply of such coal will be limited definitely by the factors I have mentioned.

Competitive Position of Coal

Here is where coal stands today in terms of the country's total energy requirements. The figures are from the Bureau of Mines for the year 1946:

Bituminous coal supplied 532 million tons, which was 42.1% of the total;

Anthracite, 61 million tons, which was 5%;

Petroleum, domestic and imported, converted to coal equivalent for statistical comparison, 417 million tons, or 33%;

Natural gas, 198 million tons, or 15.7%;

Waterpower, 53 million tons in coal equivalent, or 4.2%.

Bituminous coal reserves are estimated as enough to supply our needs for two or three thousand

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Address at the 32nd annual convention of the National Association of Purchasing Agents, New York, June 2, 1947.

years. Anthracite reserves will last for 180 years. Our natural gas at the present rate of use will be gone in 30 years, and petroleum in 14 years. Oil shales are figured as possibly a 70 years' supply. Water power, of course, is perpetual, but all our available water power facilities would not go far in meeting the country's whole energy requirements.

We hear much about the wonders of atomic energy. So far as is foreseen now, atomic energy will not be a competitor of coal to any large extent at any time in the near future.

Insofar as petroleum is concerned, while it is true that coal has lost a part of its domestic fuel market to this source of energy and must face further losses on its introduction as a fuel for the Diesel oil locomotives, it is felt that the many by-products of this fuel with their ever-increasing scope, in a relatively short space of time will make it too valuable to burn as an ordinary fuel.

The coal industry believes it has found the answer to the Diesel locomotive in the coal-fired gas turbine locomotive. The gas turbine engine is now on test at Dunkirk, N. Y., and is expected on the rails a year from now.

This revolutionary locomotive will run a thousand miles without refueling and is expected to burn less than a pound of coal per rail-horsepower-hour and burn it without smoke or cinders. It is claimed that it will operate for at least $40,000 per year less than the most economical main line locomotive of any type in use today.

The Price Question

The price of coal has risen as has almost everything else. It does not seem to us in the coal industry that the advances in the price of our product are out of line. We feel that the record as respects coal is highly creditable.

The increase in the prices of all commodities collectively from 1940 to March 1947 amounted to 90%; the increase in the price of raw materials, 127%; the increase of all manufactured products, 76%. Based on 1940 prices, the increase in price of coal to March 1947 was 47%.

The industry is doing everything within its power to hold the line on prices. The fact is that of the total cost of producing a ton of coal at the mine mouth, more than 60% is direct labor.

As of last October, the average hourly earnings of bituminous coal miners had increased 75% above the 1935-39 level; average weekly earnings had increased 182%. The weekly earnings of bituminous coal miners in the month of January, as reported by the Bureau of Labor Statistics, averaged $69.58. The bituminous miner, in point of weekly earnings, was at the top of the industrial ladder.

Offsetting Increased Fuel Costs

One way to offset increased fuel costs is through efficient utilization whereby a ton of coal yields more heat or power. The railroads, whose utilization of coal is the least efficient of any major consumer, have been making steady advances. In 1920 they used an average of 172 pounds of coal per 1,000 gross ton miles of freight, and by 1945 they were using only 155 pounds for the same haulage. During the same period the consumption of coal per passenger car mile was reduced from 18.8 to 14.7 pounds.

The Outlook

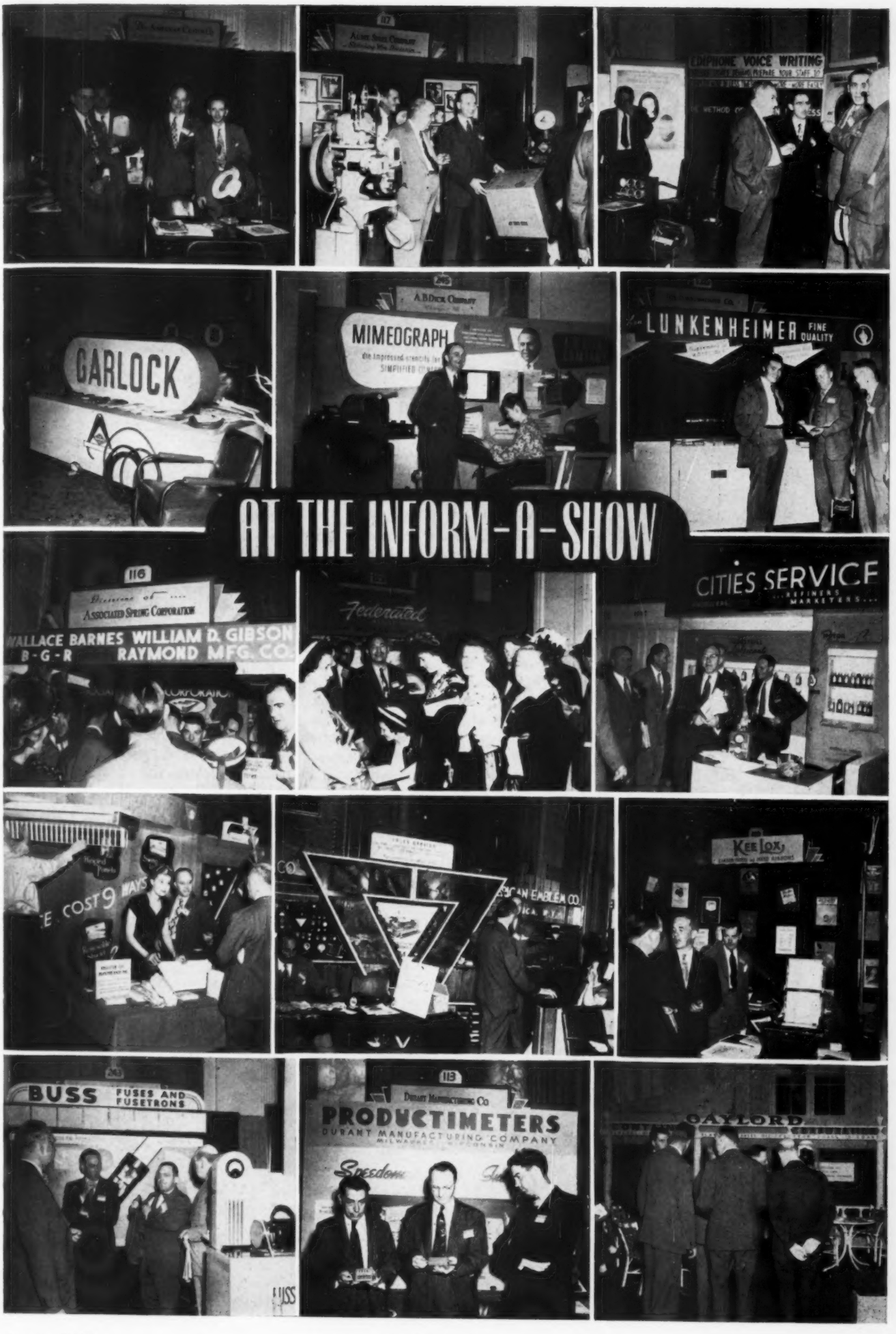
As to the immediate market outlook, much of course depends on the course of negotiations now in progress between the operators and the United Mine Workers. If the negotiators can work out a contract before the end of June, I can foresee some easing of the present stimulus to prices due to a decrease in the pressure to stock coal.

Stocks of bituminous coal in the hands of industrial consumers and in retail yards as of April 1 were reported at 51½ million tons, as compared with 58½ million tons on the same date last year. Stocks at that date were abnormally high, in anticipation of the strike. On April 1, 1945, with wartime production at its peak, stocks amounted to 45½ million tons.

Clearly, if there is no suspension of work this summer, we appear to have a reasonably safe margin of stocks which will increase somewhat during the late season.

There is, however, every indication of a general shortage of high grade coals due to the factors already discussed, and in particular an acute shortage of high volatile coking coals of good quality. This latter situation has been brought about largely by the rapid depletion of developed reserves during the war, and by the inability of producers to develop new mines during periods of wartime scarcity of material and labor.

Harvey Conover, publisher of PURCHASING, presents the original portrait drawing used on May cover of the magazine to President and Mrs. George Aljian.


DICTAPHONE VOICE WRITING
GARLOCK
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ASSOCIATED SPRING CORPORATION
WALLACE BARNES WILLIAM D. GIBSON
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PRODUCTIMETERS
DURANT MANUFACTURING COMPANY
GAYLORD

UNBALANCED SITUATION IN LUMBER

Lumber production and distribution is getting back into orderly channels; better quality and balance foreseen; prices will find fair level

By D. C. Mac LEA

President, The MacLea Lumber Company, Baltimore

THE Lumber Industry of today recognizes its responsibility to you and to all of the consumers of its products. These responsibilities are: (1) to practice sound forest management so sufficient production can be maintained for succeeding generations as well as ours; (2) produce sufficient lumber and lumber products to supply your needs; (3) get this lumber to you from reputable sources, in an orderly manner and at a fair price; (4) continually seek to improve lumber and lumber products through research to wood technology.

While we have removed prodigious quantities of lumber from the forests to build this nation since the first sawmill was built at Jamestown, Va. about 1608, there still remains an estimated 624 million acres of standing timber.

The present standing timber area represents about one-third of the area of our country or about five acres for each man, woman and child. These forests contain about one and three-quarters trillion feet of saw log timber. American timber stands need never be exhausted, for new wood is growing in our forests about as fast as we are cutting it. A great portion of the timber depletion of the past has been due to fire, insects and disease. Adequate control measures of these factors, plus enlightened use of our forests through selective logging and forest management have put our forests on a sustained yield basis in volume comparable to our removal of wood from the forests.

From these vast forest areas we remove wood for various purposes such as fuel, pulpwood, lumber, and for other uses. For the purpose of this discussion we are dealing with just lumber, which represents only 34% of the take from the forests.

According to U. S. Forest Service calculations, lumber production figures for the year 1946 show a total of 35.1 billion feet against 28.1 billion feet for the year 1945, an increase of approximately 25%. For the first quarter of 1947 it is estimated that production totalled 19½% over the first quarter of 1946.

As of 1942 it was estimated that of the 22,000 saw mills in existence at that time, about 500 mills produced over 50% of the lumber cut —the other 50% coming from over 21,000 small mills.

Normally much of the production from the small producers is pur-

chased by concentrators, who take over many of the functions usually associated with big mill production. In the war and postwar periods much of this small mill production has gone directly from the mills to the consumers without segregation in random grades, random sizes, random species and in green form. The latter is now on the wane and the return to the picture of the concentrator to perform these very necessary functions, seems to be a foregone conclusion.

During the war years there was more lumber consumed than produced. Inventories at mill and yard levels decreased until it reached a low in March 1946. At that time there was only 4.1 billion feet on hand made up of all kinds of grades and species.

Today, this inventory including mills, concentration yards, wholesale and retail yard stocks will probably total about 8 billion feet. This present increased inventory over a year ago is by no means to be considered excessive or even adequate, for the total supply is just beginning to catch up with the demand.

A lack of balance exists. At present there is undoubtedly sufficient lumber available for general construction purposes, in total. Straight grades and exacting specifications may have to be compromised. There is, however, a shortage of the better grades of lumber for millwork, such as sash, doors and cabinet work and softwood flooring and sidings. Recent estimates indicate an improvement coming in the availability of these items. Hardwood flooring is still generally in short supply. Supplies of hardwood lumber have probably increased in inventory more than softwoods. Much of this is piled for seasoning and will have to be segregated and graded before ready for use. Indications are that we will shortly have a much better balanced condition here as well as in softwoods.

Export sales of lumber have been on quota basis since wartime controls were put into effect and are still on that basis. Under this quota system these exports for the most part consist of Douglas fir and Southern yellow pine, together with small quantities of Western pine, redwood and other softwood species. Lumber exports during 1946 were less than 2% of our total production, while to offset this we had imports of lumber totalling over one billion feet, mostly from Canada.

For How Much

I doubt that anyone can convincingly tell you that they know anything as to what the price of lumber is going to be in the future. I do feel that there is at present an easing of prices of common construction lumber in softwoods, but upper grade lumber of good quality and manufacture in these same species is at firm prices.

Hardwood prices have not struck a level. In the auction market prevailing since the end of OPA there has been and still is a wide range between prices on the same item.

Beginning soon, I feel that all lumber prices will find a level consistent with cost plus a fair profit. Prices will be based upon standard grades and the inflation factor of up-grading will vanish.

Technological Research

From 1940 to the present time, technological research has progressed so rapidly that its scope is not generally understood. We are apt to think of atomic energy and electronics as blanketing the entire field of progress. American business has been responsible for many developments of great economic importance.

Perhaps a very brief listing of a few of the new products which have been developed in the various laboratories of the lumber industry will give you an understanding of how science can make a traditional and basic material, such as wood, ever new.

As a result of research developments in adhesives, laminated timbers and plywood with glue lines capable of withstanding any amount of exposure to salt water, played a most important part in ship building during the war period. Laminated lumber has many advantages in all kinds of timber work as well as in a multitude of smaller commodities in everyday use.

Hardening of wood impregnated with chemicals and compressed to a fraction of its original thickness has opened a field in many lines where wood surfaces were not entirely satisfactory in the past.

Electronics are now being employed in the high frequency field for wood bonding, shortening the drying time to seconds instead of minutes or hours, thus increasing production many times over.

Many other products are now in the hands of wood technicians, engineers, chemists and analysts to find practical commercial answers to the problems confronting the manufacturers and the users of wood products and wood derivatives.

Address at the 32nd annual convention of the National Association of Purchasing Agents, New York, June 3, 1947.

THE CONTAINERS SITUATION

The coming year will bring improved conditions in the container field; paperboard production is meeting the easing demand; textile and glass containers are in ample supply; shortages of steel sheet hampering output of drums and cans

THE containers forum on Tuesday afternoon was well attended. Lee R. Forker of the Quaker State Oil Refining Corporation, Oil City, Penna., Chairman of the N.A.P.A. Committee on Containers, presided, introducing four speakers who reviewed the present situation and outlook in respect to steel drums, cans, glass containers, paper shipping boxes, and textile containers.

Steel Drums

The steel container industry is the second largest consumer of steel sheets in this country, according to F. T. Barton, President, Jones & Laughlin Steel Barrel Company, Pittsburgh.

Any single walled cylindrical or bilged containers of 13 gallons to 110 gallons capacity inclusive, constructed of steel sheet and inclusive of all gauges, are classified as drums, he said.

During World War II, he continued, it was found that the best drum for the shipment of oil and gasoline for the armed services was one made of 16 gauge black steel sheet throughout, with pressed out rolling hoops and reinforced chimes made in accordance with I.C.C. specifications 5B.

The industry defines a pail as any steel shipping package with or without bail and handle, having a capacity of one gallon to 12 gallons, inclusive, constructed of steel sheet, 28 gauge or heavier. The pail industry has been able to do quite a bit of standardizing in the past five years.

F. T. Barton

Some companies have eliminated the old 25-pound grease pail. Several companies have taken advantage of the fact that a single container—5 gallon, 24 gauge pail—can be utilized for 5 gallons of motor oil or 35 pounds of grease. This has helped their inventory situation to some degree.

Comparison of price trends over a 10-year period reveals that steel drums have increased in price only 8⅓% during this period, while the largest price increase was reflected by used steel drums.

As recently as 1940 the used drums listed for $1 and $1.25 while present list prices are $4 and $5. At these levels, reconditioned 55-gallon, 18 gauge steel drums are selling for between 75¢ and $1.75 above the prices of new drums.

A huge demand still exists for steel drums and pails which is not being satisfied because very few drum and pail manufacturers are securing sufficient steel sheet to operate at capacity. This shortage is expected to last until the end of this year.

There is sufficient manufacturing capacity to meet the present increased demand. The only factor preventing this is the critical supply of steel sheets. We hope this will be corrected early in 1948.

In 1946 this industry consumed 654 000 tons of sheet steel. This compares with 538,000 tons in 1940.

Paperboard Shippers

Since January 1, 1947, there has been considerable speculation as to a possible increase in the supply of paperboard shipping containers dur-

ing this year, said J. H. Macleod, vice president, The Hinde & Dauch Paper Company, Sandusky, Ohio.

"The great increase in demand brought about by the war and by government purchases continued without appreciable lessening during the reconversion period following the cessation of hostilities. Manufacturers who had been engaged in war work needed shipping boxes for their peacetime products and the difficulties many of them had in getting adequate supplies caused great surprise, because the expected let-down in demand did not materialize.

"This unusual demand for all types of paper and paperboard containers has continued at full tide until recent weeks. With the filling of the channels of distribution in certain lines, coupled with consumer resistance in other lines, the pressure on the box manufacturers began to ease up at the start of the second quarter.

"While there have been comparatively few cancellations of shipping box orders, there have been some adjustments in order files, some postponements of shipping dates and some changes in specifications. These have not resulted in any marked reduction in the backlog of orders for shipping boxes.

"According to latest reports there are 17 machines scheduled to begin operations on paperboard this year. Only two of these machines are now in operation, one in the East and one on the Pacific Coast. Of these 17 machines, 12 are being installed to produce container board. Seven of these machines having an annual capacity of 224,000 tons will produce jute board, and 5 having an annual capacity of 465,000 tons will make kraft."

Mr. Macleod said that if the construction program scheduled is maintained, approximately 157,000 tons of containerboard will be made on these machines this year. "Of all new capacity", he continued, "both linerboard, corrugated medium and boxboard, the total increase in annual capacity will not be realized until 1948, and a conservative estimate is that this total will be 850,000 tons annually.

"With anything like normal conditions in the industry, the substitute materials—the so-called bogus grades—will disappear from the market. The new requirements of Rule 41—the closer policing by the railroads of the quality of boxes—will result in a closer observance of weight and calipers in order that the shipping box manufacturer can measure up to his certificate stamp."

W. G. Stolk

With the closing down of slow, high cost operations, and the closing down of 400,000 tons of liner capacity which might be termed borderline from an economic standpoint, Mr. Macleod stated that the new production of 1947 and 1948 would be largely offset and an oversupply of paperboard for box making would not likely develop.

E. A. Schrag

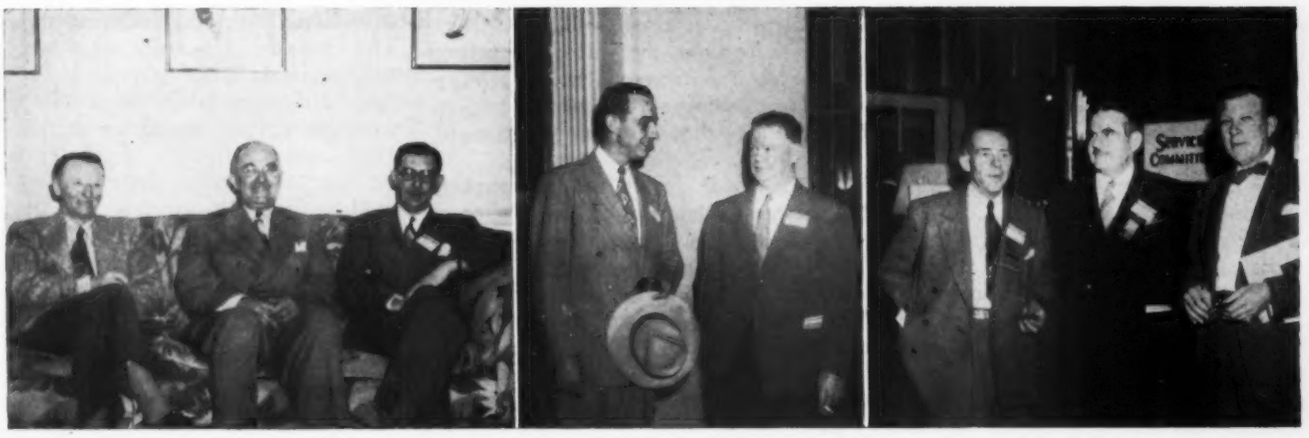
"The papermills", he continued, "are the largest consumers of market pulp and in 1946 increased their consumption of pulp by 15% over that in 1945. This year the use of pulp has further increased, causing a further drain upon inventories. Already some of the mills are resorting to the substitution of wastepaper to augment their pulp supply.

"The outlook for the coming months indicates that Canada will be able to increase somewhat its pulp exports to this country but conditions in Sweden and Finland are difficult to predict. If they can increase their shipments to this country over those of last year, the threat of shortage will be relieved.

"There is a further prospect of relief in the new pulp capacity that is being built in this country scheduled for operation this year. Stated upon a yearly basis, 1948 will open with over 960,000 tons of new pulp capacity, and a further increase of over 330,000 tons is scheduled to come in during next year.

"The paperboard and fibre box industry has shown remarkable vi-

Abstract of reports presented at the 32nd annual convention of the National Association of Purchasing Agents, New York, June 3, 1947.



tality. Over the last 10 years the production of paperboard—liners, both jute and kraft, chipboard, corrugating medium and folding and set-up boxboard has shown an increase from 5,555,500 tons in 1937 to 8,449,800 tons in 1946 and for the first quarter of 1947 it showed an increase of 13.2% over the same period of 1946 with containerboards showing an increase of 20%.

"On the converting side of the industry, shipping containers—both solid fibre and corrugated, the growth has more than kept pace—the square footage in 1937 being 32 billion square feet, and in 1946 close to 60 billion. As of May 1, production was at an annual rate of 65.5 billion square feet.

"From the standpoint of box-making capacity, I do not think you need have any concern. I think the increase in productive capacity in box factories during the last war will amply satisfy demands for the near future at least, if raw materials are available.

"In summary, I think that supplies of box-making materials, such as liners and corrugated medium will be tight during the third quarter and only slightly easier in the fourth quarter of 1947, with a somewhat better supply in the first quarter of 1947, if the new machines reach production by January of 1948.

"Should there continue a let-up in demand for both shipping boxes and cartons, I believe there will be a balance between demand and supply in the first quarter of 1948, with a slight easing of box demand during the first half of the year.

"Offsetting this easing of demand would be outlets to foreign markets which have been clamoring for supplies—both raw materials and finished boxes.

"I look for an orderly adjustment during 1948—a supply of paperboard sufficient for normal operation for the box factories, a demand for boxes considerable less than full wartime production for the box factories, but sufficient for normal peacetime operation.

J. H. Macleod

"As to prices, I think the upward spiral is over in shipping boxes and cartons. The recent announcement of $5 per ton reduction in kraft linerboard made by one large producer has stopped the extreme prices being charged by some box manufacturers. The price of jute liner remains the same as does that of corrugating medium.

"I do not look for any general softening of box prices until there are further and more general reductions in the price of raw materials and supplies.

"A brief word of advice—Maintain your sources of supply with reliable and well established companies. The conservative elements in the industry have not reached for the high dollar, have tried to maintain the quality of their products and will continue to maintain reliable service with a price basis conservatively in line with prevailing costs."

Textile Containers

Cotton Cloth Bags: Cotton mill production has increased and is expected to continue at a high level. Most pipe lines are filled and continuous flow of goods is assured by forward contracts, according to C. D. Alexander, branch manager, Bemis Bro. Bag Co., Indianapolis.

The end of OPA released a tremendous backlog of demand for some fabrics—notably print cloth and certain bag sheetings which were in short supply. Prices on these categories have risen sharply over the old OPA ceilings, but are now gradually receding. Between 75% and 80% of total output has sold at about the same prices as OPA pricing formulas.

The demand for bags to date has been such that holders of constructions used for bags are encouraged

(*Please turn to page* 326)

SHIPMAN MEDALISTS LUNCHEON

ELEVEN of the fourteen living holders of the J. Shipman Gold Medal responded to the invitation of T. W. Harris, Jr., and attended a luncheon meeting on Monday noon. This is the first time since the award was established in 1931 that the group has been assembled. By common consent, the gathering will be an annual event in connection with future N.A.P.A. conventions. D. M. Meeker, on behalf of the New York Association, donors of the medal, presented each one with a Certificate of Award similar to that which now accompanies the medal.

The photograph above shows (left to right): Thomas D. Jolly (1943), George A. Renard (1933), Edward T. Gushee (1937), Stuart F. Heinritz (1945), Walter N. Kirkman (1935), Donald M. Nelson (1941), Donald G. Clark (1936), T. W. Harris, Jr. (1938), Frederick J. Heaslip (1939), and Howard T. Lewis (1940). E. B. Hendricks (1942) later joined the group. Unable to be present were Lewis A. Jones (1932), Russell Forbes (1934), and Frederick W. Russe (1944). Deceased medalists are L. F. Boffey, who was the first man honored by this award, in 1931, and George E. Price, Jr., most recent recipient, in 1946, whose untimely passing on the eve of this year's meeting saddened the whole convention.

ECONOMICS OF MAN-MADE FIBRES

By J. B. Quig
Assistant Manager, Development Section
Rayon Department
E. I. du Pont de Nemours & Company

Ten years ago, man-made fibres represented only 10% of total fibre consumption; today they account for nearly 20% of the total

DURING the five years prior to World War II, textile fibre consumption in this country reached the unprecedented level of four billion pounds. Incident to the war there was a 50% gain to an average of six billion pounds. Our expanded economy in which total production itself is expected to be 50% greater should enable us to sustain this six billion pound level.

We have improved mass purchasing power today, the full effects of which I do not believe have been felt as yet. This higher mass purchasing power will help sustain high textile consumption. There will be a big house-furnishing demand, and there have been ten million new brides since 1941.

Finally there are the new uses which have been developed partially as a result of the war, which will widen textile markets. One of those can be illustrated by the conveyor belt which is at heart high-tenacity rayon, although usually rubber-covered. You may have seen advertisements of conveyor belts carrying ore from mine to mill over long stretches of territory. In that use the textile is competing as a form of transportation equipment. These belts are used to perform many labor saving tasks.

The current level of textile fibre consumption in the United States is twice as high as it was at the end of World War I. This has been primarily a growth of natural fibre consumption which has grown from roughly three billion pounds to five billion pounds today.

The consumption of man-made fibres has grown from less than ten million pounds per year at the end of World War I to close to one billion pounds today. Even with this phenomenal growth the man-made fibres have been outstripped by the natural fibres, two to one.

However, consumption of man-made fibres is continuing to expand and by 1949-50 it is expected that more than 1,200,000,000 pounds of man-made fibres will be consumed —20% of the total fibre consumption as compared with only 10% in 1939. This growth is accelerating.

The driving force behind this growth is the technical research man. Industry today is spending far greater sums for research than formerly and the textile industry has the benefit, not only of the current expenditures, but of the cumulative effect of the years of previous research. This has brought us closer to the solution of many of the textile problems; has made the technical man more conscious of textile requirements; has brought us to the threshold of many new uses for textiles; and has developed many new textile products into or beyond the test-tube stage.

When a better textile product is developed, the trade is quick to accept and expand its consumption of that product. Tire cord is illustrative of just such a development. While expansion was accelerated because of the war requirements for this product, the commercial interests of our customers are not far behind war interests.

The inevitable growth of the role of man-made fibres can be predicted by the fact that labor saving in their production reaches tremendous proportions. For example, for one man-hour of labor, the use of effective men and machines can produce in some synthetic fibres a product equivalent to the silk production which requires 65 and 100 man-hours to produce.

All fibres, natural and man-made are drawing closer together. Cotton, linen, wool and silk continue to be raw materials of the same importance as formely, but the nature of their relationship to our textile economy is constantly changing. The work of the textile technologist is becoming more and more like the work of the chemist and metallurgist.

The industry has made a most commendable start in placing new tools in the hands of fabric men. The non-cellulosic fibres—Saran, Fiberglas, Vinyon and Nylon have brought along with them characteristics of great utility.

Among these are extremely high breaking-strength, resistance to acids and alkalies, high elasticity, ultraviolet light or sunlight resistance, biological resistance, non-flammability, resistance to abrasion and vibration, quick drying, dimensional stability, resistance to shrinkage and degradation in laundering, and finally, resistance to degradation when exposed to high temperatures for long periods.

The superior performance of Nylon in hosiery, Saran in upholstery, Fiberglas in non-inflammable materials and Vinyon in chemical workers' clothing, are examples of how the new fibres are contributing to the establishment of a sense of the real value of textiles.

It is certain that many of the criteria required for military fabrics will also make better civilian fabrics. Some of our new synthetics go a considerable way toward meeting many of the requirements

(*Please turn to page 322*)

Address at the 32nd annual convention of the National Association of Purchasing Agents, New York, June 2, 1947.

LEGAL GEOGRAPHY OF PRICES

● ***By H. Thomas Austern***
Covington, Burling, Rublee, Acheson & Shorb, Washington

Economic revolution hinges on success of efforts of Federal Trade Commission to force all pricing on f.o.b. mill basis. Buyers cannot knowingly accept benefits of an unlawful price discrimination

A RECENT poll among American businessmen showed over 58% in favor of outlawing basing point pricing. The sale of goods to a distant consumer by pricing f.o.b. seller's factory is of recent origin.

Today each of you buys from many industries which sell only in the older way on some form of delivered price. This may be a single or multiple basing point system; it may be a nationwide uniform delivered price; or it may be a geographically zoned delivered price. Many sellers offer presumably standardized goods for delivery at the same point at the same price.

In many instances delivered price selling is charged with being in violation of the Federal antitrust laws. This legal attack dates at least from 1924 when the Pittsburgh-plus basing point system in the steel industry was condemned. In the prewar period numerous antitrust decrees required elective f.o.b. factory pricing if the buyer wanted it.

What is new is the questioning of the selling practice of an individual manufacturer under the provisions of the Robinson-Patman Act of 1936.

The subject is complex, and highly controversial, and it has a dynamic and confusing vocabulary of its own in its use of words like oligopoly, monopolistic competition, and systematic formula pricing. Often these words are unconsciously loaded.

In charging illegality in the use of delivered pricing, the Federal Government employs two weapons. The first is the Sherman Act which prohibits formal or informal agreement among sellers concerning price or any part of the price. The second is the Robinson-Patman Act which prohibits price discrimination by an individual seller where competition may be affected. The buyer is almost never involved in the Sherman Act charge, but may always be concerned in the Patman Act complaint.

Let us look first at the Sherman Act. According to the Supreme Court "any combination which tampers with price structures" is illegal. Most lawyers would say that even agreement to reduce prices is illegal conduct. It is the agreement among competitors that constitutes the unlawful restraint of trade.

An illegal agreement need not be written out. It can be found in concerted activity, in understanding based on similar conduct, or in a common course of action. It is fair to say that both the Federal Trade Commission and the Department of Justice view price identity in any form with suspicion. The only issue is one of proof. The question is, Does the fact that a group of men all do the same thing in the same way at about the same time necessarily mean that they must have agreed? The asserted paradox is that price identity may flow either from rugged competition or from illegal agreement.

The Trade Commission appears to deny that true competition can ever produce identical delivered prices among geographically separated sellers. Yet it apparently has never based a charge of collusion on the existence of identical prices alone.

Some of the questions as to how much is enough proof may be answered in the Cement case now pending in the Supreme Court. The Seventh Circuit Court of Appeals has sustained the Commission's findings that delivered pricing systems in various industries represented collusive action, yet it overturned a Commission finding of conspiracy in the cement industry.

It refused to say that the existence of the multiple basing point system in cement was of itself enough proof of illegal collusion under the Sherman Act.

Normally the buyer is not involved in the Sherman Act proceedings against sellers. But the buyer may by the plain language of the Robinson Patman Act be directly involved in any violation of that statute. Section F makes it unlawful for any buyer knowingly to receive an unlawful discrimination in price.

The Patman Act prohibits price discriminations which tend to create a monopoly, or to hinder, prevent, or destroy competition with other sellers, or among those who resell or use the product. With goods of high unit value and low unit weight, differences in freight may be insignificant. Where commodities are of low unit value and heavy in weight, shipping charges may make the delivered price difference competitively important.

The controlling question is what did Congress mean by "price"? Do we compare what two buyers pay to a seller as the delivered prices, or do we measure price by deducting transportation costs and examining the net yield at the seller's factory? On this crucial issue turns much of the present legal argument about delivered price methods under the Patman Act.

In providing that a seller may in good faith meet the equally low price of a competitor, Congress must have meant that a seller could price his goods so as to meet the laid down cost to his customer of a competitive offer. Unless transportation costs can be taken into account it is meaningless to talk about meeting competition. Clearly, the term price is used with two different meanings in the Robinson-Patman Act.

The Federal Trade Commission urges that "price" means "net realization at factory," that the seller must deduct from the delivered price which he gets, actual common carrier transportation costs to the point of delivery. The result the Commission terms the "mill net." If the mill nets are discriminatory, the prices are unlawful.

The Commission thinks that all differences in the cost of delivery by common carrier must yield different prices. It argues that where transportation is provided by a common carrier with controlled rates, the carrier and not the manufacturer is selling transportation. The defenders of delivered pricing reply that if "price" means "mill net", the justification based on different delivery costs would become meaningless because there can never be any common carrier delivery cost in a mill net price.

Thus far the Supreme Court has considered only the application of the Robinson-Patman Act to the single basing point system—where the seller builds a new plant but continues to use the old factory as his basing point.

The Corn Products Company sold syrup from its original Chicago plant on a delivered price. This was determined by adding to the Chicago base price the published rail freights from Chicago. When it opened its new factory at Kansas City it continued to charge in each locality the same delivered prices on shipments from that factory. When deliveries were made from Kansas City to nearby points the transportation factor in the delivered price was larger than the actual freight paid. This is known as "phantom freight". When deliveries were made from Kansas City to places near Chicago, the transportation factor in the delivered price was much less than the actual freight paid. This is called "freight absorption." The customers competed. The price differences were large enough to affect competition. The Commission found them unlawful.

In the Supreme Court, Corn Products argued that Congress in the Patman Act had sanctioned the use of basing points. The Court said, "No, Congress had neither sanctioned basing point pricing, nor has it required f.o.b. factory pricing, but it has left possible discriminations in each case to be measured by the Act."

The Corn Products decision made it clear that "phantom freight" cannot justify different delivered prices to different localities. An individual seller cannot determine his delivered price by adding freight from a geographical point which is not his actual place of production or shipment. As applied to multiple basing point selling, this at least means that so-called non-base mills may no longer compute their delivered prices against base mills. As a corollary, it follows that a seller who calculates his delivered price by additing transportation costs to a base price may not add railroad freight if in fact he delivers more cheaply by water or truck.

In the Staley case, the Court said that a seller may "maintain a uniform delivered price at all points of delivery for in that event there is no discrimination in price." If the delivered price is the same throughout the United States, there is no difference in price and there can be no discrimination in price.

Address at the 32nd annual convention of the National Association of Purchasing Agents, New York, June 3, 1947.

The Federal Trade Commission does not agree. To it price always means what the buyer pays, less what the seller pays to a common carrier. If price differences are significant enough to affect competition, the Commission apparently will find the individual seller in violation of the Patman Act.

Where zoned delivered prices are used, the problem becomes more complicated. Within each zone the delivered price is uniform. If the Commission view becomes law and price means factory net, there will be as many different prices as there are differently located buyers in each zone. Where competition at any level is affected, the different delivered prices between zones will require justification.

The Federal Trade Commission isolates carrier transportation costs from all other costs. In the Commission's view the cost of transportation by common carrier is not a cost in the seller's control. Therefore such railroad freights cannot be averaged, nor can the seller include common carrier transportation costs in any calculation on the due allowance theory.

Accordingly the Commission reduces all zoned delivery prices to the net factory realization by deducting carrier charges actually paid by the seller on each delivery. Since these factory nets are different, wherever the differences are competitively significant, the Commission charges a violation of the Patman Act. It has done so in the pending National Lead case which may eventually yield judicial clarification of the questions involved.

This leaves for discussion the effect of the Patman Act on multiple basing point prices and freight equalization in f.o.b. factory pricing. Here we encounter the rule that one seller may in good faith meet the equally low price of another. The Trade Commission believes that meeting competition may not be a complete defense where competition is injured. Most lawyers think it is a complete defense, and the question will soon be decided.

Although a seller may meet a competitive price, he may not wholly adopt a competitive pricing system. The Staley company entered the syrup business with a plant at Decatur, Ill. It based its delivered prices from Decatur on the Corn Products' Chicago base price plus freight from Chicago. The Supreme Court held that Staley had not acted in good faith—that one could not act in good faith when he simply took over his competitor's entire pricing system built up against a single basing point. Nor, said the Court, could Staley have acted in good faith if it had established an artificially high Decatur price and then absorbed freight to all other points. The rule may well be that one seller cannot in good faith establish his delivered prices by using as a base point for all of them the geographical location of a competitor's factory.

The effect of the Staley case on the use of the multiple basing point system must await the Supreme Court's decision in the Cement case. The use of basing point prices by so-called non-base mills is already outlawed.

From the Commission's point of view, multiple basing point selling suffers every legal disability. It does not afford the nearest buyer any price advantage reflecting his geographical proximity. On the Commission's theory that price means mill net, there is always discrimination.

The Commission's view was rejected by the Seventh Circuit Court of Appeals last September. The court first ruled that collusion in the cement industry had not been proved. It went on to consider whether an individual seller in an industry using the multiple basing point system violated the Patman Act. Since the non-base mill always charged phantom freight,

(*Please turn to page* 321)

LABOR POLICY AND PROSPERITY

(Abstract of an address at the 32nd annual convention of the National Associations of Purchasing Agents, New York, June 3, 1947)

By Leo Wolman
Professor of Economics
Columbia University

THE only way to avoid a serious recession is to translate existing physical shortages into economic shortages, Leo Wolman, Professor of Economics, Columbia University warned at the Tuesday morning session of the N.A.P.A. convention.

"We are now going through a period of contradictions in which almost every point of view can be made to look reasonable," Professor Wolman said. "There is no doubt, however, that the present situation subjects itself to corrections if we have the courage to face the facts as they now present themselves."

The two major maladjustments now confronting the country, according to Professor Wolman, are (1) the fact that prices have advanced to a level that the economy cannot sustain; and (2) the fact that much of the existing pent-up demand from softgoods to hardgoods, equipment and housing, cannot be translated into economic demand at present cost levels.

There will have to be downward adjustments in activity, prices and probably wages, Professor Wolman said, but the American economy has enough of a safety cushion to make these adjustments relatively painless if they are no longer postponed.

"If we face these adjustments quickly and do not try to dodge them, there is no reason to expect a calamity," the Columbia professor asserted.

"To succeed we must learn one thing, however," he emphasized, "and that is that there is no substitute for hard work. Costs all through the line can be brought down and must be brought down," he concluded, "if we want to maintain production and employment at a high level."

PRODUCT DELIVERY INFORMATION

A slight recession in the delivery time of a number of products marks this Product Delivery Report, namely, belting, bronze parts, felt products, pumps, rubber products, packings, valves and industrial cloths. While the changes are minor they are indicative of a trend. However, no change is reflected in electrical equipment, bearings, containers, material handling equipment, fasteners and numerous other products listed.

In this connection, your attention is directed to the summary of market information presented at the recent N.A.P.A. convention in New York, which appears on page 104 of this issue under the heading "Opinions of the Experts". Though little or no relief in the supply of various basic commodities is promised for the remainder of this year, the summary reveals that 1948 will usher in a better balanced supply of steel, copper, forest products, containers (wood, fiber, metal, fabric), and pulp and paper with the exception of newsprint and tissue.

The lead time information given in this report indicates that requisitioning departments should estimate their requirements well in advance to assure delivery when material is wanted. It is a guide to determining minimum inventory based on lead time and material usage, and should be of value in eliminating small and rush orders.

Specific attention is called to the fact that the indicated delivery time is in many instances the range of delivery reported by several manufacturers. We shall be glad to forward to the manufacturers contributing to this report, requests for more specific information.

DELIVERY TIME		
Standard Products		**Special Order**
AIR EQUIPMENT		
	Air Motors	
Stock		2 weeks
	Compressors, Below 30#	
2 weeks		2 months
	Pumps, Vacuum	
2 weeks		2 months
ALUMINUM		
4 weeks	Extruded Shapes	— —
AUTOMATIC CONTROLS		
Immediate — 3 weeks		1 to 6 months
BEARINGS		
	Ball Bearings	
3 to 4 months		4 to 6 months
	Bearings, Roller	
3 to 4 months		3 to 6 months
	Bearings, Bronze	
Stock		12 to 14 weeks, depending upon type and quantity. 10 to 24 weeks, depending upon type and size.
	Pillow Blocks	
9 months		12 months
BELTING		
	Leather	
Stock to 2 weeks		2 weeks
	V-Belting, Leather	
Stock		2 weeks
	Stitched Canvas	
Stock		1 to 2 weeks
	Endless Woven	
Stock		2 to 4 weeks
	Woven Cotton	
Stock		1 to 3 weeks
BRASS RODS		
Stock-30 days		30 days
	Brass Strip (gauges over .016)	
2 to 3 weeks		— —
BRONZE PARTS		
	Extruded Bronzes	
2 to 3 weeks		3 to 4 weeks
	Heavy Bronze Castings	
2 to 3 weeks		3 to 5 weeks
	Light Bronze Castings	
2 to 3 weeks		3 to 4 weeks
	Medium Bronze Castings	
1 to 2 weeks		2 to 3 weeks

DELIVERY TIME		
Standard Products		**Special Order**
BRUSHES		
	Power Driven	
2 to 4 weeks		4 to 10 weeks
	Maintenance Brushes	
2 to 3 weeks		4 to 6 weeks
CHAIN		
	Steel	
2 to 7 months		2 to 7 months
CHEMICALS		
	Carbolic Acid	
Tight: Annual production committed under contract. Shipments restricted to customers' monthly quotas.		
	Nitric Acid	
* * Same		
	Sulphuric Acid	
* * Same		
* * One company reports that shortage of carboys has hampered deliveries, rather than acid shortage.		
	Formaldehyde	
Very short supply.		Cannot accept additional orders.
CLEANERS		
	Metal	
10 days		— —
	Parts Cleaners	
10 to 30 days		8 to 12 weeks
COATING EQUIPMENT, INDUSTRIAL		
	Baking Ovens	
6 weeks		10 to 24 weeks
	Booths, Spray Painting	
6 to 16 weeks		12 to 16 weeks
	Paint Spraying Equipment	
12 weeks		24 weeks
CONTAINERS		
	Bags, Paper	
30 - 60 days		60 - 90 days (also, spl. orders not accepted)
	Boxes, Corrugated	
14 weeks		8 to 13 weeks
	Boxes, Solid Fibre	
8 weeks		Spl. orders not accepted
	Boxes, Fibre, Cleated	
12 weeks		2 to 5 months (also, spl. orders not accepted)
	Boxes, Paper, Folding	
Some prompt		6 to 7 months
N.P.B.M.A. reports mills are not taking new accounts, wartime allotments to customers being still in effect.		

DELIVERY TIME Standard Products		Special Order
	Cleated Plywood, Shook	
8 weeks		6 weeks
	Boxes, Wirebound	
— —		1 to 4 months
	Boxes, Wooden	
— —		2 months
	Crates, Wirebound	
— —		3 months
	Crates, Wooden	
— —		2 months
	Cooperage Slack	
2 to 3 days		2 to 3 weeks
	Nail Kegs	
1 week		2 weeks
	Half Barrels	
1 week		2 weeks
	Cooperage, Tight	
2 to 4 weeks		12 weeks
	CONDENSER APRONS	
	Chrome	
— —		30 days
	Cut and Whole Sides, Lace	
Stock		— —
	COOLANT SYSTEMS	
Immediate		2 months
	ELECTRICAL	
	Cables, Wire	
4 to 9 months		4 to 9 months
	Cables and Wire	
1 to 3 months		5 to 6 months
	Bare Copper Wire	
30 weeks		30 weeks
	Weatherproof	
20 weeks		20 weeks
	Wire, Insulated	
6 weeks		8 weeks
	Wiring Devices	
3 months		6 to 8 months
	Conduits, Flexible	
1 to 5 months		1½ to 6 months
	Raceway-Fittings	
60 days		90 days
	Generators	
— —		12 months
	Motors, Polyphase	
	1 - 15 hp	
60 weeks, slightly shorter on strictly standard		
	20 to 75 hp	
42 weeks		
	Up to 200 hp	
62 weeks		
	Fractional hp	
All fractional except aircraft 2 years		
	SWITCH GEAR	
	Breakers	
	Air	*Oil*
Up to 2.3 K.V.	45 weeks	45 weeks
2.3 to 6.6 KV	85 weeks	45 weeks
Over 6.6 KV	85 weeks	85 weeks
	Capacitors	
Up to 180 days, depending on rating of units desired in series parallel combination.		
	Transformers	
	(Distribution)	
1½ to 50 KVA — on allotment		
75 to 100 KVA — 12 to 15 months		
100 to 500 KVA — 15 to 18 months		
	(Power)	
66 to 5000 KVA — 15 to 18 months		
5000 KVA and over — 2 years		
	GASOLINE ENGINES	
	Air-Cooled	
10 to 12 months		— —

DELIVERY TIME Standard Products		Special Order
	FASTENERS	
	Bolts, ¼" to ½"	
6 months		8 months
	Bolts, Larger	
4 to 6 months		5 months
	Bolts, Stove	
10 to 12 months		
	Nuts, Self-Locking	
Stock	Semi-Std. 45-60 days	
	Specials 30 to 120 days	
	Nuts, M/Scs Size	
12 to 16 months		
	Nuts, Bolt Sizes	
6 to 8 months		
	Machine Screw Nuts	
10 to 12 months		
	Machine Screws	
8 to 10 months		8-10 months
	Milled Specials	
— —		2 to 3 months
	Headed Specials	
		5 months
	Phillips Recessed Head	
6 to 12 months		
	Slotted Sheet Metal Screws	
6 to 12 months		
	Self Tapping Screws	
4 to 8 months		
	Socket Head Cap Screws	
Stock to 6 weeks		6 to 8 weeks
	Socket Head Set Screws	
Stock to 8 weeks		8 to 12 weeks
	Socket Screw Keys	
Stock		1 to 4 weeks
	Rivets	
4 to 6 months		
	Washers, Flat	
20 to 30 days		15 to 20 days
	Washers, Lock	
3 days		6 days
	Wood Screws	
5 to 6 months		6 to 7 months
	FELT PRODUCTS	
2-3 weeks		3-4 weeks
	FITTINGS	
	Brass, Bronze	
3 to 12 months		— —
	Copper or Bronze Fittings, Solder Type	
Stock to 60 days		
	Tube Fittings	
Stock to 2 months		2 to 4 months
	Malleable Iron	
Small quantities Stock to 60 days		
Large quantities 6 months		
	Stainless Steel Fittings	
60 to 90 days		90 to 120 days
	Steel Tube Fittings	
Stock to 60 days		2 to 4 months
	Pipe Plugs	
Stock to 4 weeks		1 to 4 weeks
	FORGINGS	
— —	Brass or Aluminum	3 to 4 weeks
	FURNACES	
	Heat Treating	
4 to 10 weeks		8 to 32 weeks
	Ovens, Industrial	
4 to 10 weeks		8 to 32 weeks
	Metal Fabrication	
— —		2 to 6 weeks
	Steam Traps	
Stock		8 to 12 weeks

DELIVERY TIME Standard Products	Special Order
GAUGES	
2" Pressure	
Immediate to 30 days	30 to 90 days
2½" Pressure	
Immediate to 30 days	30 to 90 days
2" Oxy-Acetylene	
Immediate to 30 days	30 to 90 days
2½" Oxy-acetylene	
Immediate to 30 days	30 to 90 days
GEARS	
2 to 8 weeks	6 weeks to 10 mo.
Differentials	
— —	9 to 10 months
GRINDING WHEELS	
Vitrified	
— —	4 to 6 weeks
Resinoid	
— —	4 weeks
(Finished stock, 2 to 4 days; semi-finished, 4 to 8 days)	
HOSE, FLEXIBLE, ASSEMBLIES	
15 to 45 days	30 to 90 days
HOSE	
Molded, Braided	
Stock to 20 weeks (depending on size and construction)	
Wrapped Hose	
Stock to 6 weeks (depending on size and construction)	
LEAD	
2 to 3 weeks	4 to 6 weeks
LIGHTING EQUIPMENT	
4 to 6 months	8 to 12 months
Fluorescent Units	
Immediate	30 days
HORNS, HOWLERS, SIGNALS	
10 to 20 days	30 days
LUMBER	
Creosoted	
2 months	
Fir	
2 to 3 months	Unobtainable
White Pine	
Delayed Delivery — Mills oversold	
Yellow Pine	
2 months	
Cypress	
1 to 2 months	Unobtainable
MAGNESIUM	
4 weeks	Sheet — —
MATERIAL HANDLING EQUIPMENT	
Industrial Storage Batteries	
Lead acid	
Stock to 4 weeks	6 to 12 weeks
Casters, Truck	
1 to 4 months	5 to 6 months
Casters, Semi-Steel Plate	
4 months	— —
Casters, Welded Steel Plate	
3 months	
Assembly Conveyors, Belt	
3 weeks	10 weeks
Conveyors, Belt	
10 to 12 months	Indefinite
Conveyor Belting	
10 months	10 months
Conveyor Belting, Rubber	
6 to 9 months	6 to 9 months

DELIVERY TIME Standard Products	Special Order
Conveyors, Coal	
12 weeks	25 weeks
Conveyors, Roller Gravity Light, Medium	
2 weeks	6 weeks
Conveyors, Sand, Gravel	
12 weeks	25 weeks
Conveyors, Inclined Belt, Stationary, Horizontal	
6 weeks	12 weeks
Elevators, Bucket	
10 months	12 months
Elevators, Hand	
1 month	4 to 6 months
Elevator Belting, Rubber	
6 to 9 months	6 to 9 months
Elevators, Portable Hand	
3 weeks	6 weeks
Elevators, Portable, Electric	
3 months	6 months
Elevators, Electric	
2 months	4 to 6 months
Elevators, Portable, Tiering	
1 to 4 months	2 to 7 months
Pallets, Fork Lift	
— —	10 to 14 days
Platforms	
3 months	4 months
Skids, Lift Truck	
1 month	
Tractors, Gasoline, Industrial	
2 to 3 months	2 to 4 months
Tractors, Electric, Industrial	
1 to 14 months	2 to 16 months
Trailers	
Factory-Warehouse	
6 to 12 weeks	10 to 24 weeks
Trucks, Hand, 2 wheel	
1 to 3 months	6 mos. — indefinite
Lift Trucks, Hand	
2 weeks	4 weeks
POWER INDUSTRIAL TRUCKS	
"Special truck. Delivery time will run from 9 to 24 months."	
Lift Trucks, Electric	
10 days	4 weeks
Fork Lift Trucks, Gasoline	
1500# to 10,000 #Cap.	
2 to 6 weeks	8 to 10 weeks
Fork Lift Trucks, Electric	
1 to 2 months	2 to 3 months
3000 to 4000 lbs. Fork	
1 to 2 months	3 months
4000 to 6000 lbs. Fork	
2 to 3 months	
6000 lb. Low-Lift	
45 days	
Crane Trucks	
2 to 9 months depending on capacity	
Platform Trucks (Stake-Rack)	
3 months	6 mos. — indefinite
Jack & Skid Systems	
2 weeks to 3 months	
PACKINGS	
Leather	
Stock to 2 weeks	1 to 3 weeks
Oil Seals	
2 weeks	12 weeks
ALSO SEE RUBBER PARTS	
PIPE	
Brass	
1 to 2 weeks	— —

DELIVERY TIME	
Standard Products	**Special Order**

Pipe, Fabricated

1 month	Carload, 3 to 4 mo. LCL, 6 to 8 weeks

Copper Pipe

3 to 12 months (depending on supply of copper from refineries). Tube mill production is very uncertain.

PIPING

Exhausts and Blow

— —	1 to 3 months

Steel, Welded, Riveted

3 months	Indefinite

PLASTICS

Mold Delivery, 8 to 20 weeks
Parts Delivery, 4 to 6 weeks

PUMPS

Centrifugal

4 to 6 weeks	12 to 14 weeks
No motor — 12 weeks	24 weeks

Power Pumps

16 weeks	24 weeks

Pumps, Hydraulic

24 weeks	

Turbine

4 weeks	12 to 14 weeks

RUBBER PARTS, SYNTHETIC

Extrusions

2 weeks	2 to 3 weeks

Molded Parts

3 weeks	3 to 6 weeks

Die Cut Parts

— —	2 to 3 days

Sheet Rubber Packing

2 to 3 days	

Synthetic Sheet Rubber Packings

2 to 3 days	

Synthetic Rubber Sheets

2 weeks	

Synthetic Rubber Rolls

2 weeks	

SCALES

Platform, Portable

4 to 8 months	7 to 9 months

Truck, Wagon

2 to 8 months	6 to 11 months

SCREW MACHINE PRODUCTS

— —	45 to 120 days

Brass, Aluminum, Steel

— —	2 to 3 weeks

SPRINGS

Extension, Compression Torsion

— —	3 to 12 weeks

Spring Stampings

— —	120 to 180 days

STEEL, CARBON

5 months	7 months

SPEED REDUCERS

8 weeks	10 to 14 weeks

SPROCKETS

4 to 6 weeks	6 to 8 weeks

TANKS

Steel

Immediate	5 weeks

DELIVERY TIME	
Standard Products	**Special Order**

TAPES

Masking

2 weeks	— —

Electric

7 weeks	— —

Cloth Back

12 weeks	— —

TIN

10 days	2 to 3 weeks

Conservation Order M-43 places limits on deliveries of pig tin on the quantities of tin used.

TRANSMISSION BELTING

Stock to 24 weeks	24 weeks

Flat Transmission, Rubber

Stock to 2 months	4 months

V-Belts, Rubber

Stock	12 weeks

TUBING

Aluminum

4 weeks	— —

Alloy

2 to 3 weeks	— —

Stainless Seamless and Welded Tubes

2 months	4 months

VALVES

Brass

Stock to 30 days	— —

Bronze

Stock to 30 days	— —

Bronze, Solder Type or Threaded

Stock to 60 days	

Valves, Iron

Stock to 60 days	4 to 12 months

Valves, Steel

Stock to 120 days	

Quarter-Turn Plug Valves

Stock	8 to 12 weeks

Hypressure Jenny Steam Cleaner

Stock	3 weeks

Valves, General

Stock to 30 days	60 days

Stainless Steel

60 to 90 days	90 to 120 days

WIRE

Aircraft Cable Wire

Immediate to 2 weeks	6 to 8 weeks

Card Wire

6 to 8 weeks	5 to 6 weeks

Music Spring Wire

Immediate	3 to 4 weeks

Wire Forms

— —	3 to 4 months

Constantan

24 weeks	— —

Iron

20 weeks	— —

Platinum

10 weeks	— —

WIRE CLOTH

Insect Screen
Copper, Bronze, Aluminum

10 months	Beyond 10 months

Standard Hardware Cloth

8 to 10 months	8 to 10 months

Coarse Industrial Cloth

1 week to 3 mos.	2 weeks to 3 mos.

Fine Industrial Cloth

4 to 7 months	4 to 7 months

Some Stock, immediate

Both the buyer and the seller have a keen interest in the question of who is obligated for payment when a purchase order is issued

By Leo T. Parker

●

PERSONAL LIABILITY ON COMPANY ORDERS

A FEW days ago a reader wrote: "When may a corporation official make a contract that obligates the corporation, and when is the official himself personally liable on contracts he makes for the corporation?"

Broadly speaking, a corporation official who makes a contract in his own name, without disclosing the identity of his corporation, renders himself personally liable even though the third person knows that he is acting as agent for the corporation, unless the testimony proves the *mutual* intentions of the contracting parties was that the official should not be personally obligated on the contract.

For example, in A. A. Electric Machinery Company, Inc., v. Block, 193 S. W. (2d) 631, reported June, 1946, the testimony showed facts as follows: In the year 1930 Mr. Williams was president and manager of a corporation. Williams purchased a considerable quantity of equipment and merchandise for the corporation during 1930 and 1933 which the seller charged *personally* to Williams.

In subsequent litigation Williams contended that he was not personally obligated to pay for the merchandise because it was used by the corporation.

The higher court held Williams personally liable to pay for *all* of the purchased merchandise. This court explained important law, as follows: An official or agent who would avoid personal liability on a contract entered into by him on behalf of his principal has the legal duty to prove *not only* the fact that he was acting in a representative capacity, but also that the identity of his principal was disclosed to the other party *before* the contract was made.

How to Avoid Liability

Generally speaking, a corporation official is personally liable on contracts made for the corporation: (1) where he makes a false statement or representation of his authority, with intent to deceive; (2) where he knowingly makes a false statement or representation, without intention to deceive; (3) where he does a damaging act believing he has authority, but actually has none; or (4) where he acts on authority from his superior and does an unlawful act. (See Tripp v. Bell, 78 S. E. (2d) 126.)

Therefore, in order to avoid personal liability on contracts all corporation officials and employes must be certain to avoid violating this rule.

Another important legal rule is that an official or employe may be personally liable in a contract for the corporation if his affixed signature does not clearly bind the corporation, and the other party to the contract believes that the official is not acting for the corporation. On the other hand, a corporation official is never liable on a contract signed for the corporation, if the testimony shows that the other party knew that the official intended to obligate the corporation.

See Thompson v. Blackwell, 56 Ky. 490. This court held an official *not* personally liable on a contract he signed: "George W. Williams, G. W. P." The testimony proved that at the time the contract was signed the other party knew that Williams represented the corporation. Of course, Williams was compelled to prove the facts, or he may have been held personally liable on the contract.

For comparison see the leading case of Tucker Mfg. Company v. Fairbanks, 98 Mass. 101. Here a contract was signed by an employe who failed to prefix either the word "By" or "For". Moreover, the name of the employer did not appear in the body of the contract. Therefore, the court held the employe personally liable on the contract, because he could not convince the court that at the time he signed the contract the other party knew that the corporation was being represented.

Proper Signature

In view of the dangerous consequences when corporation officials sign contracts, it is well to know that an official is relieved of all risk of personal liability on contracts,

RECENT COURT DECISIONS HAVE BEEN BASED ON THE ANSWERS TO THESE QUESTIONS

Is a corporation liable for payment when the identity of the corporation is not disclosed in placing the order?

What precautions should a purchasing agent take as to the form of his signature on a purchase order?

Can a corporation be held liable for contracts that are outside the scope of its charter?

Does a company official require special authorization in order to execute contracts binding upon the company?

What is the legal status of a corporation whose directors have voted to discontinue the business?

Under what circumstances does an assistant purchasing agent have authority to sign purchase orders?

What is the legal liability of a subsidiary corporation?

or other papers, which he signs with proper authority for a corporation provided the name of the corporation appears in the body of the contract, and the official's signature is preceded by the word "By," "For," or "Per". For further protection the word "Agent" should follow the official's signature.

Obviously this law is not exclusively applicable to corporation officials. The same law is effective with respect to all others who sign contracts or obligations. The signer becomes personally responsible, unless before he signs the contract he makes it clear to the other contracting party that his signature is being affixed in representative capacity.

See American v. Great Southern, 16 So. (2d) 140, reported 1946. Here the testimony proved that a person named Neelley signed a partnership's financial statement. On faith of this a seller extended credit to the partnership.

The higher court held Neelley personally liable to pay the seller who sued the partnership, although the testimony showed that actually Neelley was not a partner in the business.

The only reason Neelley was ordered by the court to pay for merchandise purchased and used by the partnership was because the seller extended credit to the partnership believing that Neelley intended to be personally responsible.

Considerable discussion has arisen from time to time over the legal question: From where does a corporation derive its power, and who has legal authority to bind the corporation, and receive payment for services rendered and merchandise purchased?

In Independent, 66 F. Supp. 957, reported January, 1947, the court held that all corporations are creations of laws which authorize their existence, and that no corporation officer or employe may perform any act or make any contract not clearly authorized by law.

In Nashville Breeko Block & Tile Company v. Hopton, 196 S. W. (2d) 1010, the court explained that corporation directors and officers must perform the ordinary duties of their offices without compensation, and cannot recover compensation for such services, unless the corporation's charter, or by-laws, or a resolution of the board of directors, or the stockholders authorized payment.

Thus, this court clearly decided that either a corporation's charter; by-laws; a resolution of the board of directors; or a resolution by the stockholders is legal authorization for special contracts.

Also, this court held that the law *implies* that a corporation will make *reasonable* payments for *unusual* services rendered by an official. Hence the court held that the corporation must pay the reasonable value of managerial services rendered to the corporation by a vice-president and stockholder, although such payment was not authorized by either the corporation's charter, by-laws, or by resolution of either the board of directors or the stockholders. This court also held:

"A corporation director or officer may recover reasonable value of services rendered by him to corporation outside his duties and under circumstances fairly indicating that parties intended and understood or reasonably should have intended and understood that such services were to be paid for."

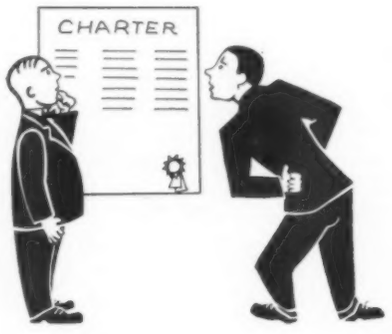
For comparison, see McClayton v. W. B. Cassell Company, 66 F. Supp. 165, where the Federal Court held:

"An officer of a corporation is not in the ordinary sense an 'employe' of the corporation, though he may also be an employe where, in addition to his duties as an officer, he is also employed in a separate capacity."

Ultra Vires Contract

Generally speaking, a corporation cannot be held liable on an *ultra vires* contract. However, a recent higher court held that an *ultra vires* contract may be enforced against a corporation which benefited from the contract. But if the complaining party fails to prove special benefit, he cannot recover a favorable verdict.

For example, in Pollack Paper and Box Company v. East Motor Company, 197 S. W. (2d) 883, reported March, 1947, a printer sued the East Motor Company for money due for printing of waybills. The printer introduced before the court a written order signed by the corporation's purchasing agent. However, further testimony showed that the waybills were *for use of another corporation*. In other words, the East Motor Company's credit was extended for benefit of this other corporation.



The higher court held that the printer could not recover payment from the East Motor Company because he could not prove that the latter either derived profit or benefit from the *ultra vires* transaction.

A corporation has decided and important advantages over individuals and partnerships. A corporation, for instance, is not liable for

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When specifications call for SAE 950, you have the right answer in N-A-X HIGH-TENSILE. This low-alloy steel—with inherently finer grain structure—has demonstrated its outstanding properties in factory after factory: high strength, good formability, excellent weldability, high fatigue-resistance, great impact toughness, high corrosion-resistance. Think of N-A-X HIGH-TENSILE when you think of SAE 950. It's a great steel to work with.

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any act of an employe not within the scope of the employment, or for contracts not within the scope of the business as defined by the corporation's charter, and not authorized by the directors. Moreover, any person who transacts business with a corporation is bound at his peril to know that the official who assumes authority to obligate the corporation is legally authorized to do so. And while an individual and partnership is liable for contracts made by employes, who act within the scope of their employment, a corporation is *not* liable for contracts made by an employe who acts within the scope of his employment and within the scope of the business, but outside the scope of the corporation's charter. In other words, a corporation is not liable on contracts signed by duly elected officers, unless the subject matter may fairly be construed as being within the scope of the corporation's charter. Moreover, a corporation is not liable for unauthorized contracts made by its officers, particularly where the company is not benefited.

Generally speaking, a corporation is liable for any and all contracts or acts, approved by its directors, within the scope of the articles of incorporation which describe the business in which the corporation may engage. On the other hand, a corporation is not responsible on a contract or act *ultra vires,* or one outside of the scope of the article of incorporation. However, if the directors approve a resolution for "doing business", the corporation is liable for all contracts made thereunder, providing of course the contracts relate to the corporation's business.

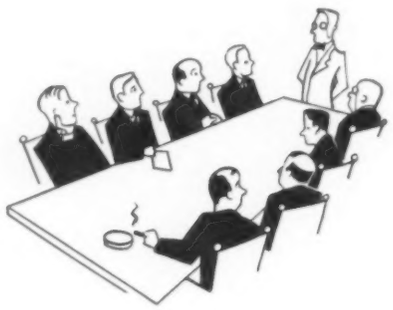
For example, in the leading case of California Canning Peach Growers v. Harkey, 78 Pac. (2d) 1137, the higher court said:

"Any contract or conveyance made in the name of a corporation which is authorized or ratified by the directors . . . except as their authority is limited by law . . . shall bind the corporation, and the corporation shall acquire rights thereunder, whether the contract be executed or wholly or in part executory."

Right to Discharge

According to a recent higher court any official of a corporation may be removed by the board of directors whenever *in their judgment* the business interests of the corporation will be benefited. This rule of law is applicable notwithstanding the fact that stockholders may have entered into a contract to hire the official for a specified number of years.

For illustration, in Koppitz-Melchers, Inc., v. Koppitz, 24 N. W. (2d) 220, the testimony showed facts, as follows: A man named Koppitz spent considerable time and some money in an effort to organize a corporation. Finally real property was purchased and buildings were erected, equipped and ready for occupation. At a meeting of stockholders a resolution was



presented and adopted that a ten-year contract be entered into with Koppitz, who would be president and general manager of the corporation.

Soon afterward the board of directors of the corporation sent Mr. Koppotz a notice that he was discharged because it was found that he had accepted a secret profit of $5,000 during organization of the corporation.

In subsequent litigation the higher court held:

"In our opinion the stockholders had the authority to approve a contract with Koppitz for a period of ten years in so far as it related to services to be performed for the corporation. They did *not* have the power to enter into a contract with Koppitz providing that he would be the president of the corporation during this ten-year period."

Thus, it appears that while stockholders may remove or discharge from office any official, yet a corporation may not breach a valid contract, of employment or otherwise, unless it is liable in damages for the breach.

It is certain that until a corporation official is removed from office, and while his employment contract remains unexpired, the corporation is obligated by all contracts made by such official relating to the corporation's business.

For example, in Rose Printing Company v. Paint Manufacturers, Inc., 18 N. W. (2d) 881, reported July, 1945, the testimony showed that the president of a paint corporation ordered labels from a printer. Soon afterward the president went to Florida. There was no question but that the labels were received and receipted for by the paint corporation's employes at its plant during absence of the president. Later the president of the corporation testified that he ordered only 10,000 labels, but that in his absence in Florida the printer had delivered 50,000 labels.

The printer admitted the arrangement as to prices was *indefinite* because he did not know exactly what was wanted or how much the art work, plates and other expense of labels would be.

The higher court held the printer entitled to recover full payment for all of the labels accepted by the paint corporation's employes and said that the labels were received and retained by the corporation through its president and employes, and that the printer may recover "reasonable" payment for work done, although no definite price was made or agreed upon when the order for printing was given by the president.

Of course, important testimony in this case was that the corporation's president, on his return from Florida, did not offer to return the labels to the printer. If the president had immediately returned to the printer 40,000 labels, which he claimed he had not ordered, it is

possible that this court may have refused to order the corporation to pay for the full 50,000 labels, 40,000 of which the president testified he had not ordered. However, the fact that the corporation retained in its possession the 50,000 labels, delivery of which the corporation employes had accepted, resulted in a valid obligation.

In Geiman-Herthel Furniture Company v. Geiman, 174 P. (2d) 117, 162 Kan. 48, reported Feb-

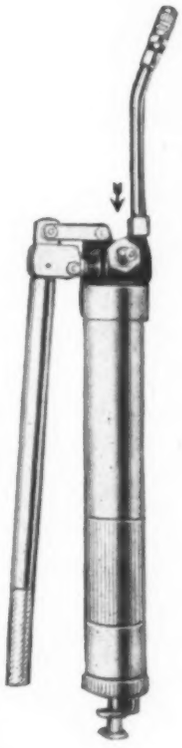
(*Please turn to page* 306)

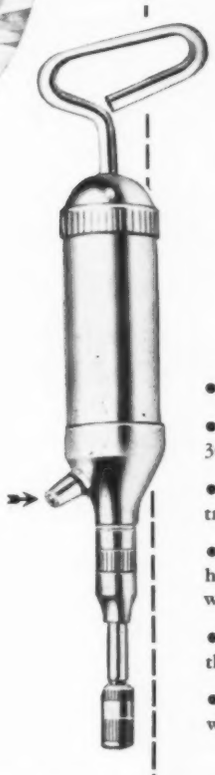
Here's a Great New Lubrication Package That Saves Time, Money and Lubricants!

NEW ALEMITE LOADER-TYPE GUNS

Plus

NEW ALEMITE COMBINATION LOADER AND VOLUME PUMP





LOADER-TYPE HAND GUNS

- Loader fitting mounted in heads of the grease guns.
- No need to dis-assemble guns when reloading.
- Clean! It ends wasteful, messy hand and paddle methods.
- Assures refinery-clean lubricants from barrel-to-bearing.
- Promotes a safer, more positive lubricating operation.
- Eliminates troublesome air pockets in the gun.
- Guns are available in both Lever Type and Push Type Models.

COMBINATION LOADER AND VOLUME PUMP

- It's a loader for filling hand guns and—
- It's a volume pump that delivers grease under 3000-lbs. pressure directly to bearings.
- Holds 35 lbs. of lubricant which means fewer trips to the oil room.
- Hand guns are loaded by simply pumping the handle a few strokes. Loader automatically locks when gun is full.
- No contamination or waste, no air pockets in the gun, no danger of damage to the gun.
- Gun fits carrying bracket on container. The whole unit is easy to carry.

- No plant is too large or too small to enjoy the faster, cleaner, more positive lubrication results this new Alemite equipment provides.

Here in one compact package is the practical answer to the problem of handling and transferring lubricants. Alemite, 1894 Diversey Parkway, Chicago 14, Illinois.

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HAND OPERATED HOISTS

CHAIN hoist of steel and aluminum alloys is equipped with precision anti-friction bearings and sealed-in lubrication. Weight saving, reduction in minimum pull with perfect control, and strength and durability are featured, according to the manufacturer. Known as Cyclone Model M, the hoist comes in ¼ ton, ½ ton, 1 ton and 2 ton capacities, equipped with "Herc-Alloy" steel chain. *Chisholm-Moore Hoist Corp., Tonawanda, N. Y.*

PORTABLE GAS DETECTOR

THE M-5 Vapotester is a portable gas detector, operating on standard flashlight batteries. It is made to locate leaks in underground gas mains and service lines, and is said to quickly read concentrations up to 100% gas on a meter having a three-range scale. Each instrument has a carrying strap and is 4½" deep, 6¾" wide, 7" high and weighs 7½ lbs. *Davis Emergency Equipment Co., Inc., 180 Halleck St., Newark 4, N. J.*

SAFETY CONTAINERS

"SAFE GUARD" safety containers are made in 1, 3 and 5 gal. sizes, for storing and carrying flammable and volatile liquids. They are made of terne plate, lead-coated inside and out, with pouring spout of non-sparking die cast brass opening to full 180° angle. Flame arrester, consisting of double screen of cadmium coated steel, is optional. *The General Detroit Corp., 2272 E. Jefferson Ave., Detroit 7, Mich.*

SILICON-COPPER WELDING ROD

SUPERIOR flowing characteristics and better welds than those obtained by welding rods of phosphorous - deoxidized copper analysis are claimed for the new silicon copper analysis Airco No. 23A welding rod. The rod is said to provide an excellent color match on copper, and is believed by the manufacturer to be the equal of silver-copper rods for this class of work. It is available in ¼", 3/16" and ⅛" diameter. *Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.*

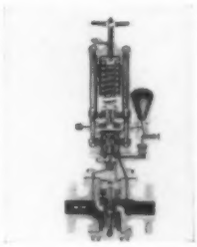
SCALE-AND-DUMP TRUCK

SINGLE unit combines three handling tools: dump-bucket, platform scale, and standard electric load-carrier truck. Called the "Portable Batching Scale-and-Dump Combination", it has 40 cu. ft. dump hopper supported on scale platform by four heavy coil springs for protection against shock. A 24" diameter scale, graduated in 5 lb. measurements, records loads up to 3,000 lbs., and is protected by shatter-proof glass. *Yale & Towne Mfg. Co., Philadelphia, Pa.*

VACUUM CLEANER-BLOWER COMBINED

IMPROVED model Breuer Tornado portable industrial vacuum cleaner combines suction and blowing operations. Used as a blower it provides a 295 mph air blast. When used as a vacuum cleaner, suction of 185 cubic feet of air per minute with a 49" water-lift is effected. Apparatus weighs 40 lbs. Special attachments available. *Breuer Electric Mfg. Co., 5100 M. N. Ravenswood Ave., Chicago 40, Ill.*

IMPROVED PUMP GOVERNOR



ELIMINATION of stuffing box and rubber diaphragms features this pump governor. It has hard surfaced seat rings, 800 Brinell hardened stainless steel main valve and 500 Brinell cylinder liner. Hard seating surface is applied as a welded section to seat rings of bronze governors and to the main body of steel governors. Available in sizes from ½" to 4" for inlet pressures from 40 to 600 psi at temperatures to 750 F. *Leslie Co., 121 Delafield Ave., Lyndhurst, N.J.*

TELESCOPIC ADJUSTABLE GRAVITY CONVEYOR

NEW telescopic portable gravity conveyor for short haul packaged goods handling is available in three sizes, 20', 30' and 40' long, each folding to a 10' length. Features include frame construction of ½ x 1½ x 3/16 channel iron, and ball bearing skate wheels. It is easily adjustable for height and incline. Casters facilitate moving, and pressure brake locks conveyor while in use. *Wilkie Co., 5520 Arch St., Philadelphia, Pa.*

NEW SCRAP CUTTER

RAM-DRIVEN scrap cutter Model D-611, is said to be capable of being used on any punch press to cut all stock to 4" width and 3/32" thickness. The unit measures 6½" wide, 9¼" deep, 10" high. Mounted on the bolster plate of the press, it is driven directly from the ram or die and is adjustable for any length of ram stroke up to 6". High speed steel blades are removable and replaceable. *Haller Machine & Mfg. Co., Inc., 7940 Tireman Ave., Detroit 4, Mich.*

(*Please turn to page* 150)

AN EXAMPLE:
This is a diesel engine exhaust manifold outlet fabricated with Tube-Turn welding fittings taken out of regular stock. Replacing castings—eight such outlets to an engine save .71 lbs. per horsepower. Seems little, but multiply this by 1000 and you have 710 pounds of dead weight eliminated.

"It can be done!"

SO MANY piping problems are solved with the use of welding fittings that it pays to see your Tube-Turn Distributor first. He handles *the fitting that becomes part of the pipe.*

Tube-Turn welding fittings—engineered in design, built with closer tolerances than code requirements, available in a wide variety of styles, sizes and materials—often offer just the right answer to what sometimes seems an impossible problem. Welding fittings for example, permit extremely close nesting without flow loss. Tube-Turn welding fittings have uniform wall thickness and full circularity which allows them being cut and used at odd angles. Order one, one-hundred, or a thousand Tube-Turn welding fittings of the same size and part number and they will be dimensionally uniform. They can be and are being used in production line assembly of equipment.

For full information about the more than 4000 types and sizes in the complete line of Tube-Turn welding fittings and flanges—for details about the wide range of special metals and alloys—for the name of your nearest distributor, write to—

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District Offices at New York, Washington, D. C., Philadelphia, Pittsburgh, Detroit, Chicago, Houston, San Francisco, Los Angeles.

TUBE-TURN TRADE MARK **tt** ***Welding Fittings and Flanges***

(*Continued from page* 148)

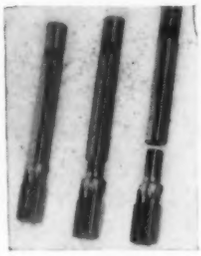
FLAMEPROOFING COMPOUND

PERMANENT flameproofing is said to be obtained for rugs, drapes and similar items by use of Antoxol, a new organic flameproofing compound. Being a balsamic resinous organic compound, it will not powder off, according to the manufacturer. The compound will not alter color, appearance, sheen or feel of fabrics, and laboratory tests show it increases tensile strength of fabrics, it is declared. *Eronel Industries, 5714 W. Pico Blvd., Los Angeles, Calif.*

THREE-STEP BEVERAGE WATER TREATMENT

MIXING of chemicals with raw water, turbidity removal and storage of treated water are accomplished by the Permutit three-stage precipitator. The unit may be used for removal of turbidity and color alone, or as a combination de-alkalizer and turbidity remover. During either process the water is sterilized. Water treated by the precipitator and passed through a Neutralite filter, which removes any remaining floc, and an Activated Carbon Purifier, for 100% removal of taste and color, emerges as the perfect beverage water—clear, uniformly low in alkalinity, and odorless and tastless. Descriptive booklet available. *Permutit Co., 330 W. 42nd St., New York, N. Y.*

NIB TAPS WITH HOLLOW SHANKS

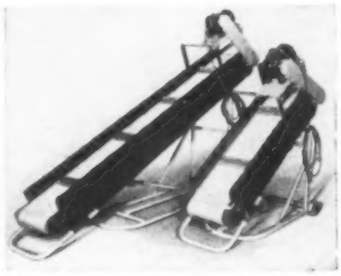


NIB type M-11 taps, coupled to hollow stanks, tap through several parts at a time, allowing tapped parts to load up on the long shanks. Tap, when full, is removed from quick change type chuck to unload parts. Knurled portion on OD of shank assists operator with wet or oily hands in removing tap from chuck. Taps are made of cobalt chrome high speed steel, with stub shank, splined to fit the hollow shank. Nib only requires replacement when worn. *Detroit Tap & Tool Co., 8432 Butler, Detroit 11, Mich.*

MOTORIZED VALVE FOR COMMERCIAL APPLICATIONS

COMPACT motorized valve said to be especially adaptable for commercial machinery and equipment, provides automatic two-position (on-off) operation of valves for steam, air gas, oil or water. The induction type motor develops a positive power-drive through a worm and spur gear reduction. Limit switches are adjustable. The valve requires a 3-wire thermostat, pressure switch or other similar instrument for actuation. It operates from either 24, 110, or 220 volt, a-c power source. *Automatic Temperature Control Co., Inc., 34 E. Logan St., Philadelphia 44, Pa.*

SMALL BELT CONVEYOR

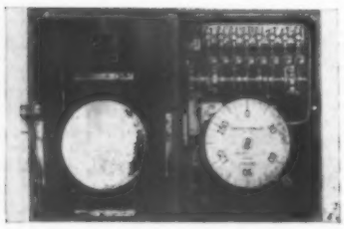


PRIMARILY designed for use between punch press machines where space must be conserved, the new Press-Veyor power belt conveyor is said to be readily adapted as a steep-angle unit for handling many types of products. It has a 4 ft. conveyor bed, and can be adjusted from a minimum height of 9″ to a maximum of 30″ at the receiving end; from 39¼″ to 61¼″ at the delivery end. It is powered by a ⅓ hp gear head electric motor, either 115 v—60 c—1 phase a-c, or 220 v—60 c—3 phase a-c. Two wheel design allows the conveyor to be easily moved. *The Rapids-Standard Co., Inc., Grand Rapids, Mich.*

AIR-DIELECTRIC VARIABLE CAPACITOR

AIR-DIELECTRIC variable capacitor has a range of 30 - 1 between minimum and maximum capacitance. The new condenser has been designed for use in commercial radio and industrial electronic applications and is said to be virtually impervious to mechanical shock. The capacitor has a flash rating of 560 volts and the capacitance is adjustable from 5 mmf. (min.) to 150 mmf. (max.) by rotation through 5,000 degrees. Maximum outside diameter is ⅞″, overall length 1¾″ and weight approximately 16 grams. *North American Phillips Co., Inc., 100 E. 42nd St., New York, N. Y.*

TIME CYCLE CONTROLLER



THIS Model C500 impulse-sequence cycle controller is designed for use on plant processes where such factors as the opening and closing of valves, switches, dampers, retorts, and presses, and the starting, stopping or reversing of motor-driven pumps, and blowers, must be accurately timed according to a fixed program. Timing is accomplished by a Telechron-driven aluminum disc on which is printed a 25″ time scale. Schedule of operations is cut into the time scale with a notching punch. Location of notches determines time of operation of the cam mechanism. Time impulses are transmitted electrically from the timing disc to cam mechanism. Time measurement and pilot valve operations are handled by separate mechanisms. *The Bristol Co., Waterbury 91, Conn.*

PROTECTIVE COATING FOR WALLS AND FLOORS

SURFACE pores of concrete walls and flooring are said to be sealed by Carbo floor coat, preventing absorption and attack from mild acid and alkali solutions, oils and detergents, and water. The coating can also be used on wood. It comes in green, red, gray and black, and is applied by brushing down or use of a push broom. It penetrates into the pores of concrete or wood and will not "bridge" or form a hard, lacquer-like film over the surface. It does not form a thick coating, is not slippery, and maintains its effectiveness until the floor is well worn. Drying time is 3 to 4 hours. *Carbozite Protective Coatings, Inc., Greensburg, Pa.*

POWDER-POWERED TOOL

MODEL 38 "Drive-It" industrial powder-powered tool is said to drive anchor studs as much as 3″ into average concrete, punch holes through steel plate up to ⅜″ and rivet steel plates together up to ¾″ thickness. It weighs 7 lbs. and is said to deliver a 20-ton blow by means of a small charge of special powder encased in a cartridge. The "Drive-It" will not function unless forced vigorously against the work, thus cannot be used as a gun. It cannot be discharged as a result of falling. A special recoil mechanism absorbs all the shock. *Powder Power Tool Co., 618 N. Vancouver Ave., Portland, Ore.*

(*Please turn to page* 152)

NO YEAST - *NO BREAD*

NO SCRAP - *NO STEEL*

QUALITY
YOUNGSTOWN
SERVICE

YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

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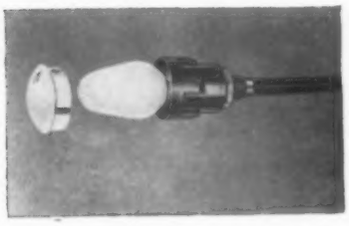
Pipe and Tubular Products-Sheets-Plates-Conduit-Bars-Rods-Wire-Electrolytic Tin Plate-Coke Tin Plate-Cold Drawn Carbon Steel Rounds - Tie Plates and Spikes.

REMEMBER this--It requires large quantities of scrap to produce each ton of prime new steel. So to increase the possibility of making more steel available, turn in your scrap through your regular channels. Do it now! Keep it coming!

(*Continued from page* 150)

NEW PILOT LIGHT DESIGNS



TWO new pilot light designs, are available in voltages up to 230. The one illustrated employs a screwbase Mazda C-7 lamp in a plastic socket, to prevent loosening of the bulb. The socket is mounted in a single ⅜" hole and furnished with 6" pigtail leads. Translucent white plastic front panel lens is held in position by spring clip and is mounted in 1" hole. The other is a red or clear neon pilot light to match Hart Diamond-H snap switches and convenience outlets. It is spring mounted, requiring no screws. It needs an opening ⅜" x 1¼" and has a depth of 1". *Hart Mfg. Co., 110 Bartholomew Ave., Hartford, Conn.*

600-TON HOT FORGING PRESS

NEW departure in percussion press design, introducing hydraulic pressure for rapid economical production of hot forgings, brass, aluminum, steel, in a wide range of shapes, is incorporated in 600-ton Hydro-Screw Press. The press employs a fly wheel at top of screw to develop quick hammer-like blow. In many cases only a single blow is required to finish a part. It is equipped with one 40 hp—1200 rpm motor and two Vickers PV—2050 pumps and has an 11" diameter —12" lead—4 thread screw. Three sizes are available in 400, 600 and 1,000 tons capacity. *E. W. Bliss Co., Detroit, Mich.*

PNEUMATIC TIRED FORK TRUCK

DESIGNED for surfaces too uneven for solid tires, the pneumatic tired "Yard-lift-40" fork lift, gasoline motor, truck has a capacity of 4,000 lbs. at 24"; a lift of 120" with 85½" overall height. It is 42" wide overall, giving a high degree of maneuverability, and has a heavy duty transmission with speeds of 9.4 mph in high and 2.9 mph in low, forward or reverse. The engine compartment has been arranged for easiest access. *Clark Tructractor, division of Clark Equipment Co., Battle Creek, Mich.*

REVERSE POLARITY ARC WELDING ELECTRODE

HARDALLOY is the name of a new d-c reverse polarity arc welding electrode said to produce weld metal that is highly resistant to impact or abrasive wear in hard-surfacing operations. Maker states the deposited weld metal tests 59.0 Rockwell "C" hardness, and may be heat treated for machining or grinding, with subsequent re-heat treating restoring original hardness. Electrode is available in five sizes from 3/32" to 1/4". *McKay Co., 1005 Liberty Ave., Pittsburgh 22, Pa.*

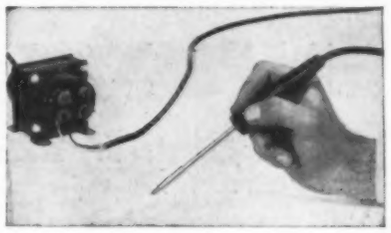
ALL-STEEL BALL BEARING MOTOR

ROTOMOTOR is an all-steel fabricated fractional hp ball bearing electric motor. The motor includes specially designed baffles and louvres in the housing, which result in low heat rise. Starting winding is made from glass insulated wire, and gun-metal oxidization of the starting mechanism before assembly minimizes rust in service. Sealed-for-life ball bearings are standard equipment. The line includes ⅛ hp split phase motors and capacitor start units of the same rating for both 110 and 220 volts. The company expects to produce a line of motors ranging from ⅛ hp up to one hp in both split and three phase. *General Die and Stamping Co., 262-272 Mott St., New York 12, N. Y.*

HIGH FREQUENCY BRAZING & ANNEALING

NEW indexing table for soldering, brazing and annealing round or irregularly-shaped small parts, is designed particularly for heating parts where shape or control of heat requires close and accurate coupling. Heating cycle is adjustable as is index speed. Normal upward and downward travel of load coil is 3½", but may be changed as needed. The table can be used with any Lepel high-frequency converter or any other high-frequency generator and is equipped with a built-in automatic heating timer. *Lepel High Frequency Laboratories, Inc., 39 West 60th St., New York 23, N. Y.*

LIGHTWEIGHT SOLDERING IRON



PRECISION, "fingertip" soldering where space is limited is said to be possible with the new Calrod "Midget" soldering iron, which is available with tips ¼" and ⅛" in diameter. It is 8" long and weighs 1¾ oz. without the cord. It is rated 25 watts, 6 volts, and is used with a 115/6-volt insulating transformer. A transformer with 4 taps for variable heat is available. The heater is built into the tip of the iron to within ½" of the working end. The "Midget" has a chisel-shaped copper tip. Tip and heater are easily replaceable as a unit. *General Electric Co., Schenectady, N. Y.*

POWERFUL INSECTICIDE TO CONTROL COCKROACHES

REPORTEDLY ten times more effective than DDT against certain insects, new insecticide, chlordane, aids in the elimination of cockroaches from industrial buildings, hotels and institutions. It is made in spray and dust forms under the name of Dowklor and kills insects by direct contact and stomach action and as a vapor but is not hazardous to man and domestic animals when used as recommended. It retains its effect for several months and destroys many other types of insects, it is said. *The Dow Chemical Co., Midland, Mich.*

SPECTACLE-TYPE SAFETY GOGGLE

MAXIMUM protection is said to be offered with this F9200 series goggle with Ful-Vue acetate frame providing a more exact fit, increased comfort and better appearance. Featured is a keyhole bridge, strong but light, with a slight amount of face form. The goggle is available with skull temples, which consist of a strong wire core encased in acetate. It is available with either 6 Curve Clear or Calobar Super Armorplate lenses. *American Optical Co., Southbridge, Mass.*

(*Please turn to page* 154)

. . . for leaders of industry by leaders in plastics molding

Injection molding of thermoplastic materials is one of the most important functions at CMPC . . . and has been since the early days of commercial injection molding. Our facilities have expanded from a single press to our immense Thermoplastics Division with its own separate facilities for material handling and shipping plus a battery of injection presses to produce large or small parts with speed and precision.

But injection molding is just one phase of Chicago Molded's service, for our Compression Molding Division is one of the largest and best equipped in the Middle West. And, whatever the job, we assume undivided responsibility . . . from design and engineering through mold building, molding, and finishing to on-time delivery.

Many successful firms, both large and small, know the value of this service, placing CMPC first on their list of suppliers of molded plastics parts. Why not discuss *your* plans with a CMPC Service Engineer? There's no obligation.

CHICAGO MOLDED PRODUCTS CORPORATION

1025 N. Kolmar Ave. Chicago 51, Illinois

Representatives in principal industrial centers

COMPRESSION *and* **INJECTION** *molding of all plastic materials*

Switch to—

AUTO-LITE

Precision Manufacturing

Die Castings

All forms of zinc and aluminum die castings, machined, finished and plated.

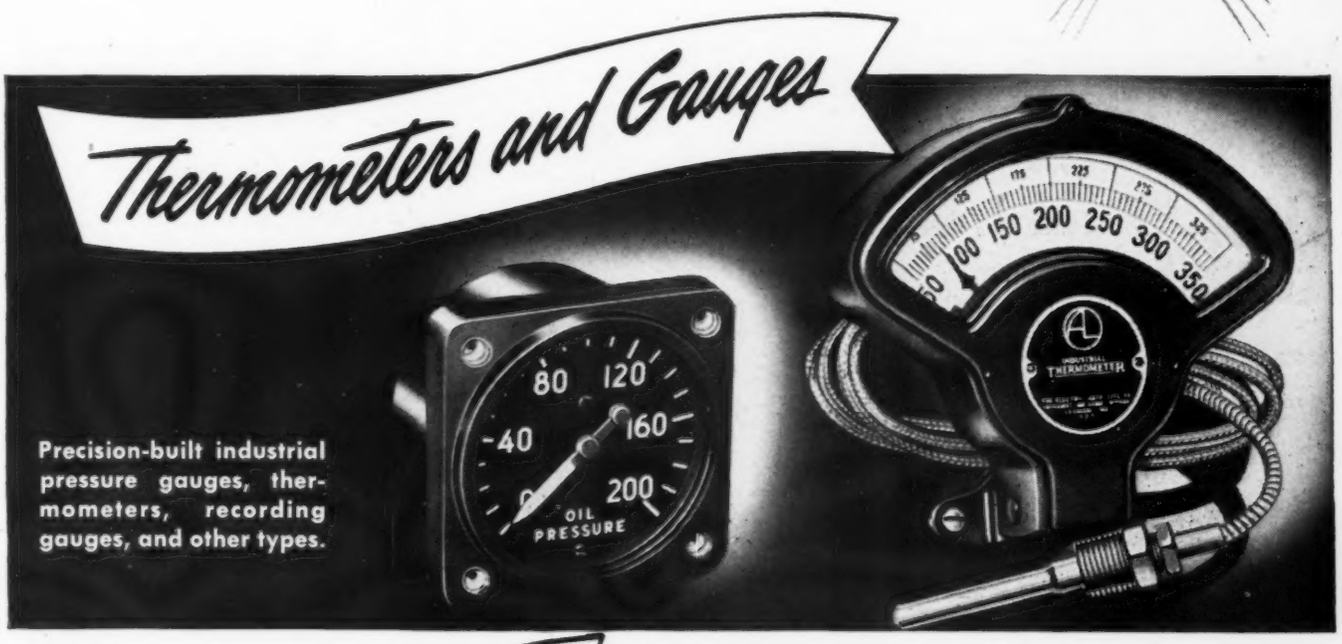
Plastics

Plastics by compression, automatic, injection and transfer methods. Plastic-metal assemblies.

THERE are 36 years of experience back of the more than 400 products precision manufactured by Auto-Lite for many industries. The facilities of 26 great manufacturing plants, combined with the ""know-how" of Auto-Lite engineers and designers, have won a world-wide reputation for unvarying quality and dependability. A new booklet listing many of the major products of The Electric Auto-Lite Company is available. To obtain your copy write to

THE ELECTRIC AUTO-LITE COMPANY

Sarnia, Ontario Toledo 1, Ohio



Precision-built industrial pressure gauges, thermometers, recording gauges, and other types.

Magnet wire, high and low tension cable, flexible cords and cord sets. All types of insulations.

Wipe Out

OVERLOOKED EXPENSE ITEMS *with*

"KEX"ES

INDUSTRIAL WIPING TOWELS

IN THESE DAYS when it is so necessary to keep operating costs at a minimum, it may be well for you to look into your small expense items that may have been overlooked.

Is "price buying" of scrap rags and waste really wasting money in scratched surfaces on expensive, highly sensitive machinery?

One way to reduce such unnecessary cost is to use KEX National Service from your local authorized distributor. KEX Industrial Wiping Towels are brought to you on regular schedules in any quantity, as you need them.

KEX Industrial Wiping Towels are uniform in size and made from new, soft textured fabrics woven to specification for Industrial use. Edges are bound to eliminate fraying and catching onto machinery. KEX towels are made for wiping. They are not discarded fabrics that have served their purpose in some other capacity. There are no hard seams, no forgotten buttons to mar delicate, sensitive surfaces.

Rent Kex Industrial Wiping Towels and Watch Costs Go Down. Nothing to buy—no expensive inventory—just a low monthly rental. The first month you use this service should show a decided saving on wiping costs.

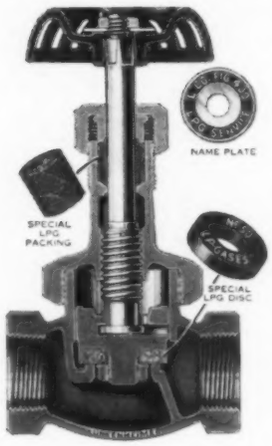
For complete information, see your classified Telephone Directory for nearest KEX distributor, or write KEX National Service, 295 Fifth Avenue, New York 16, New York.

"KEX" NATIONAL SERVICE

REG. U.S. PAT. OFF.

"KEX"
REG. U.S. PAT. OFF.
NATIONAL SERVICE
A CALLAWAY MILLS PRODUCT
INDUSTRIAL WIPING CLOTHS

400-LB. PRESSURE VALVE FOR LIQUIFIED PETROLEUM GAS



DESIGNED for high pressure liquified petroleum gas service, the "N-M-D" (Non-Metallic Disc) bronze valve is made in globe, angle and check patterns, sizes ¼" to 3", screw ends. The valve is said to safely withstand pressures up to 400 lbs. W.O.G., with disc and stem packing especially compounded for liquified petroleum gas service. A back seat above the stem thread permits repacking the valve under pressure when wide open. Disc can be renewed easily, it is said, and all other parts are renewable. *The Lunkenheimer Co., Cincinnati 14, O.*

PRECISION MARKING MACHINE

MARKING machine No. 203 is available in two models, motor-driven and hand-operated, for precision marking on cylindrical or cone-shaped machine tool feed dials, cylindrical sleeves, optical devices and similar type parts. Motor driven model is for parts up to approximately 6" in diameter with graduation numbering and small amount of lettering, with provision for slight variations in diameter. Bench model will mark graduations and numbers on parts up to approximately 3" in diameter. *Jas. H. Matthews & Co., 3959 Forbes St., Pittsburgh 13, Pa.*

(Please turn to page 158)

Now! LIFE INSURANCE EXPERTS PROVE THAT FORD TRUCKS LAST *up to* 19.6% LONGER

FOR THE first time in history, the scientific methods used by life insurance companies in computing rates have been put to work in figuring out life-expectancy tables for Ford Trucks.

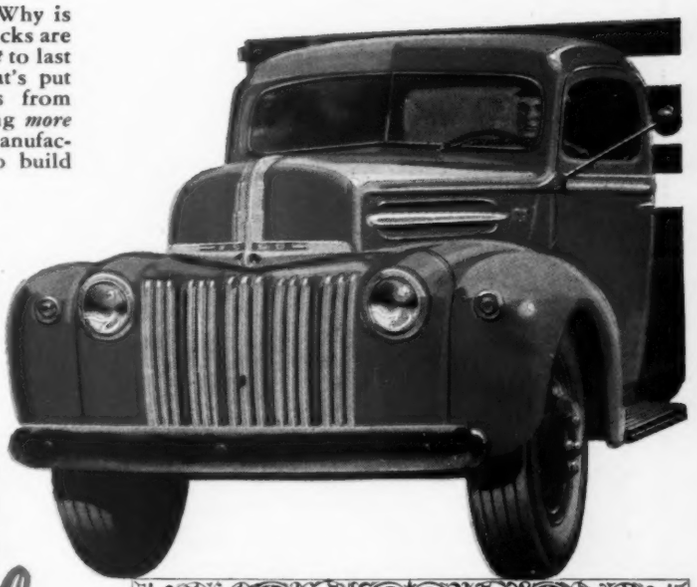
4,967,000 Trucks Studied . . .

Wolfe, Corcoran and Linder, leading New York life insurance actuaries, assembled the records of all trucks of the five sales leaders registered from 1933 through 1941 . . . 4,967,000 trucks in all. Then they prepared *truck* life-expectancy tables in exactly the same way that they prepare *human* life-expectancy tables for life insurance companies.

Ford Trucks On Top!

The result? Ford Trucks Last Longer! Up to 19.6% longer than the other 4 sales leaders! Why is this true? Because Ford Trucks are *built* stronger. They're *built* to last longer! That extra life that's put into Ford Trucks comes from Ford experience in building *more* trucks than any other manufacturer. Ford knows *how* to build trucks that last longer!

See your Ford Dealer today. See the life-expectancy charts. You'll see why it'll pay you to place your order for a Ford . . . the truck that lasts longer!



Certified Proof

What Longer Truck Life Means to You . . .

Why It Pays to Wait for a New Ford Truck!

It stands to reason the longer you use a truck, the less it costs to own. That's why longer-lived Ford Trucks are the top truck value. And, logically, Ford longevity means lower maintenance costs . . . less time in the shop. It means more unused miles when you're ready to trade, and a better trade-in. Yes, any way you look at it, you'll get more truck for your money with a Ford Truck . . . because Ford Trucks last longer!

FORD TRUCKS LAST LONGER!

The life expectancy of a Ford Truck is:

13.1% longer than that of Truck "B"
3.2% longer than that of Truck "C"
7.6% longer than that of Truck "D"
19.6% longer than that of Truck "E"

OFFICIAL ACTUARIAL CERTIFICATE

Based on the application of sound and accepted actuarial methods to the actual experience as measured by truck registrations, we hereby certify that, in our opinion, the accompanying table fairly presents the relative life-expectancy of the trucks involved.

WOLFE, CORCORAN AND LINDER
Life Insurance Actuaries, New York, N. Y.

60 YEARS OF SERVICE to INDUSTRY

SUPPLYING
WASHERS
and
STAMPINGS
OF EVERY DESCRIPTION FOR EVERY PURPOSE... UTILIZING MORE THAN 22,000 SETS OF DIES
Let Us Quote On Your Needs!

WROUGHT WASHER MFG. CO.
THE WORLD'S LARGEST PRODUCER OF WASHERS
SINCE 1887
2113 SOUTH BAY STREET • MILWAUKEE 7, WISCONSIN

You can do any of these jobs
FASTER-EASIER-BETTER
with Strand Flexible Shaft Machines
Grinding • buffing • polishing • sanding
drilling • reaming • rotary filing • wire
brushing • screw driving • nut setting
wood filler rubbing • rasping

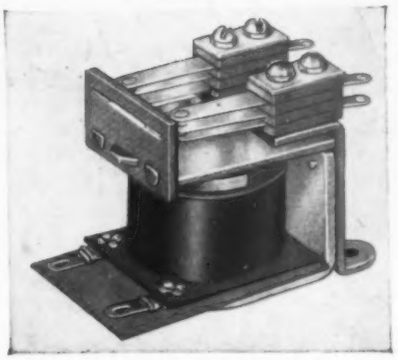
M-5

Strand machines provide PORTABLE rotary power at CONSTANT speeds with dependable results and less operator fatigue. Ruggedly built for years of steady use. Hundreds of attachments easily interchanged—125 types and sizes—vertical and horizontal models from ⅛ to 3 H.P.

DISTRIBUTORS IN ALL PRINCIPAL CITIES
Send for CATALOG showing complete line

Strand FLEXIBLE SHAFTS
N. A. STRAND & CO.
5005 NO. WOLCOTT AVE.
CHICAGO 40, ILL.

MIDGET RELAY



SERIES 600 Guardian Relay is designed to meet industrial needs for a small, compact, low cost relay. Maker states it is capable of performance equal to many larger relays. It can be furnished with innumerable contact switch combinations up to and including four pole, double throw. The maximum contact current capacity is 8 amperes and power consumption is 6 va. *Guardian Electric Mfg. Co., 1635 W. Walnut St., Chicago, 12, Ill.*

AUTOMATIC PRECISION SELECTOR

LOW cost, completely automatic inspection of small parts is claimed for the electronic segregator Model DS-20. The three classifications are oversize, acceptable and undersize. The selector is said to be accurate to .000010" and to sort parts with tolerance from plus or minus .0001 to plus or minus .005 at speeds up to 12,000 parts an hour. Fully automatic and semi-automatic feed mechanisms are available. Model DS-20 comes as a "packaged unit" with gage head, master control, segregator, gage head stand, table, chair and three tote pans. The head has no frictional moving parts, coils, switches or magnets. Three other packaged units are available. An electrical counter for counting the number of acceptable and the number of oversize pieces and a hearing aid which makes possible the efficient operation of the selector by a blind person are accessories which can be added to any model. The selector can also be adapted for measuring internal dimensions, for simultaneous checking of more than one dimension, or for sorting into more than three classifications. *The DoAll Co., 254 N. Laurel Ave., Des Plaines, Ill.*

(*Please turn to page* 162)

What to do about Rust?

Make this Test

Immerse any rusty nail in a small quantity of Cities Service Rust Remover. If badly rusted, allow to remain for several minutes. You can actually see the rust dissolve.

See the Results

Remove nail and wipe dry with cloth or tissue. Note the complete absence of rust and the way the original surface reappears.

Cities Service Rust Remover has been tested for four years throughout a small, highly industrialized area in the East, where it has earned a unique reputation for performance. RUST REMOVER is a clean, clear liquid, practically odorless, non-inflammable, easily applied, and harmless to handle by those not allergic to specific chemicals. It is fast-acting, and, although heating somewhat accelerates results, general application is recommended at normal temperature (60°-90°F.). RUST REMOVER is effective on chromium, copper, aluminum, steel and iron.

See a Free Demonstration of Rust Remover on Your Own Equipment

(Available only in Cities Service marketing territories EAST of the Rockies.)

Cities Service means Great Service

5 Big Advantages

1. Non-inflammable
2. Harmless to Normal Skin
3. Makes Metals Chemically Clean
4. Removes Rust by Chemical Action
5. Free from Muriatic, Sulphuric, Nitric and Oxalic Acids or Cyanide

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NEW YORK · CHICAGO

Arkansas Fuel Oil Co.
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Mail this Coupon Today!

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SIXTY WALL TOWER, NEW YORK 5, N. Y., ROOM 148

Gentlemen: I'd like to test RUST REMOVER on my own equipment FREE OF CHARGE. Send me details.

NAME .....

COMPANY .....

ADDRESS .....

CITY ..... STATE .....

NOW It's Easier to WITH THESE

W-32 for formerly "hard-to-weld" steels

Copyright 1947 General Electric Company

Type W-32 is a lime-ferritic electrode especially developed for successful production welding of so-called "problem" steels—cold rolled, high-carbon, high-sulphur, and steels of high hardenability which are susceptible to underbead cracking. With stable arc characteristics providing good directional control, W-32 offers the following primary advantages:

1. **Elimination of underbead cracking on hard-enable steels.**

2. **Material reduction in hydrogen content of the weld metal produces welds that can be *successfully enameled without heat treatment.***

3. **Marked decrease in tendency for surface holes to occur when base metal is high in sulphur content.**

4. **Excellent appearance of finished welds.**

5. **Spatter is minimized, deposition efficiency is high, penetration is adequate but not excessive, and slag is sufficiently heavy and fluid to provide good protection against oxidation; and the new, improved version of this electrode is suitable for welding in *all* positions with either reverse-polarity d-c or a-c.**

If you are welding any of these steels, you'll want to investigate W-32. Too, you may want to consider the use of special steels such as free machining or cold-rolled, which welding limitations have heretofore ruled out. W-32 has removed these limitations.

STAINLESS STEEL ELECTRODES

G.E. has just recently introduced an outstanding line of stainless steel electrodes—27 types in all, including both Lime and Titania type coatings—for better welding of all AISI standard analyses of stainless. For information on these, W-32, W-2075, or any G-E arc-welding electrodes, equipment, or accessories . . .

. . . CONSULT YOUR NEAREST G-E ARC-WELDING DISTRIBUTOR.

Apparatus Department, General Electric Company, Schenectady 5, N. Y.

HERE'S WHAT USERS SAY ABOUT

ELECTRODES

GENERAL ELECTRIC

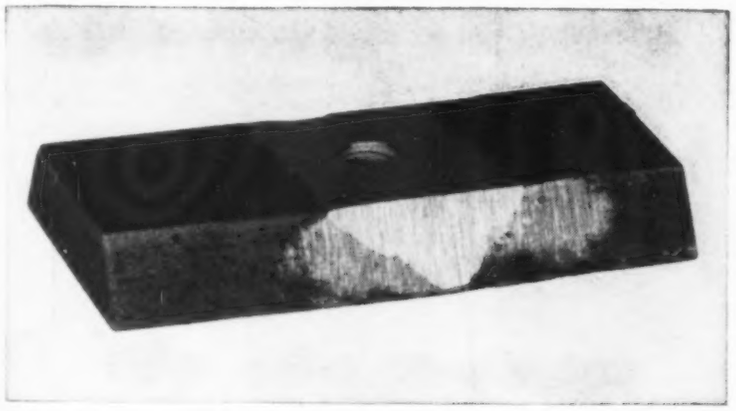
Weld "Problem Metals" NEW G-E ELECTRODES

W-2075 for making *machinable* welds on cast iron

This latest addition to the G-E electrode line has been developed specifically for making machinable welds on cast iron. It is equally suitable for both welded fabrication of cast iron and for repair work, and is extremely useful for filling holes and making repairs on castings.

Numerous applications are to be found in repairing motor blocks, radiators, machined parts, and other cast-iron sections requiring machining, drilling, or tapping; it is also recommended for welds where pre-heat cannot be used.

Weld deposits are smooth, uniform, and well bonded to the cast material; they are free from internal and surface porosity. The ability of the deposited metal to bond readily with the cast material, plus the absence of any large volume of slag, makes W-2075 usable in *all* positions with either a-c or d-c.



This cast block has been V'd out, welded with W-2075, and then drilled and threaded. Note the excellent bond between weld and parent metal and the absence of cracks and porosity.

➔ VERSATILE W-20 ELECTRODE REDUCES ROD STOCKS

"Our continued purchases of G-E W-20 electrode over a number of years have been made as a result of the tested adaptability and versatility of this general purpose rod. Through its use in various phases of road machinery fabrication, we have found it possible to cover a multitude of welding applications without the necessity of stocking a large variety of welding rods.

"In our production of large road building equipment there is need for an electrode which is particularly adaptable to poor fit-up work and can be used in all positions. We have found the W-20 electrode not only answers these requirements, but could be employed with either A-C or D-C machines, insuring the utilization of all available welding units on a single production line, if so desired.

"We sincerely appreciate your cooperation and many helpful welding recommendations—in particular, those in reference to the application of the versatile W-20 electrode."

Yours very truly,
W. A. RIDDELL CORPORATION
(Bucyrus, Ohio)
By:
Jacque Jones
General Manager

another job
DONE RIGHT

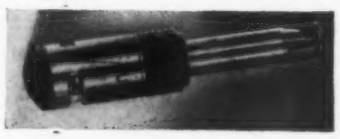
with an ARMOUR Alundum Cloth Belt

WHATEVER YOUR PRODUCTS OR SPECIALIZED NEEDS . . .
one of Armour's complete line of better metal-working abrasives is *right for you!*

ARMOUR
Sandpaper
WORKS

Division of Armour and Company
1355 West 31st Street • Chicago 9, Illino's

FAUCET INSERT



IMPROVED Superior faucet insert, available in brass and chrome finishes, is claimed by manufacturer to fit 95% of all faucets now in use, making old faucets better than new. It is guaranteed to stop faucet leaks, and is said to provide a complete new faucet mechanism—thread, seat stem and new type compression shut-off. The shut-off is concentrated in a floating bronze bearing forced up by "on" pressure, then down as handle is turned "off". Special "short" model for short stem faucets is now available. All inserts are fitted with an adapter to fit all types of standard handles. *Superior Valve Mfg. Co., 3301 Mayflower Rd., Cleveland 15, O.*

RENEWABLE CARTRIDGE FUSES ANNOUNCED

PURPOSE of renewable "Time-Delay" cartridge fuses is to give protection against electric circuit "blows" on overload operations within the 135% and 200% range. Two types, said to meet all requirements of the "Standards for Fuses", are available in 250 and 600 volts, and in 1 to 600 amperes. Knife-blade type is designed to maintain alignment of the blades, and the Ferrule type for easy accessibility. Catalog available. *Economy Fuse & Mfg. Co., 2717 Greenview Ave., Chicago 14, Ill.*

MOTOR FOR PUMP DRIVES

HOLLOW-shaft vertical motor designed specifically for pump drives has been added to G.E. line of Tri-Clad induction motors. It is available in ratings from 1 to 500 hp, in all speeds and frequencies, and is suitable for use on irrigation projects, deep-well turbine pumps, municipal and industrial water-supply projects, mine-dewatering pumps, and process-industry liquid pumps. More information in GEA 4645. *General Electric Co., Apparatus Dept., Schenectady, N. Y.*

(*Please turn to page* 164)

Upon that tiny thread a life may hang

A master of detail, the surgeon takes no chances. No one knows better than he the vital importance of thorough preparation and painstaking care. Instruments and accessories must be in order . . . and lights must be strong, steady, dependable.

Yet, despite all precautions of utility companies, accidents beyond their control can cause interruptions of normal electric current. Many hospitals, and other buildings, are safeguarded against lighting failure. They are equipped with Exide Emergency Lighting, which instantly and automatically takes over the lighting load when other sources fail.

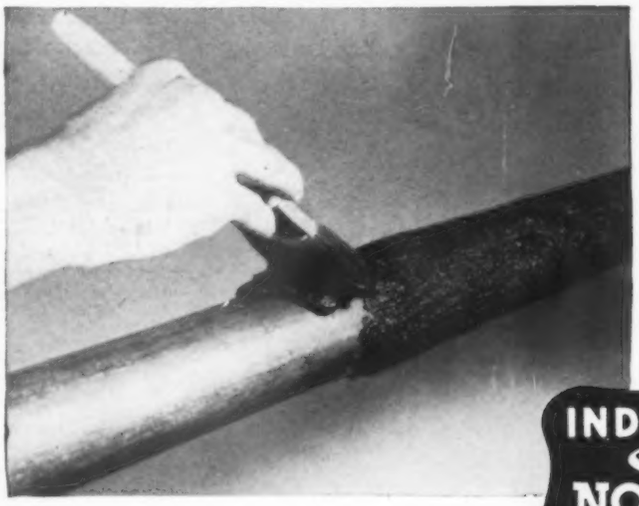
There are Exides for every storage battery need. They furnish safe, dependable power for time-and-cost-saving battery-electric trucks and mine haulage units. They are used by telephone and telegraph companies, railroads and radio stations. On airplanes and marine craft they perform many tasks. And on millions of cars, trucks and buses, they give daily proof that "When it's an Exide, you start."

For 59 years the name Exide has stood for dependability, economy, safety and long-life. Information regarding the applications of storage batteries for any business is available upon request.

Exide

BATTERIES

THE ELECTRIC STORAGE BATTERY CO.
Philadelphia 32
Exide Batteries of Canada, Limited, Toronto



COVER PIPES TANKS WALLS

INDUSTRIAL NoDrip

Anyone can brush, trowel or spray NoDrip on any clean, dry surface. Goes on like plaster, forms a seamless, protective coating which effectively *stops condensation drip.*

NoDrip keeps equipment and floors safe and dry; prevents corrosion of metal and prolongs its life. Acid, alkali and brine resistant. Comes in 1, 5 and 55 gallon drums, ready for use.

TRY NoDRIP

Apply NoDrip to a small area, compare the results with uncovered portions.

Send for Free NoDrip Handbook

J. W. MORTELL CO. 547 Burch St., Kankakee, Ill.

This HY-PRO Ground Thread Tap will save money and boost production

When tapping at high speeds, this ground thread tap will usually produce at least 6 times as many threaded holes as a cut thread tap... with less power, less sharpening, less breakage.

A complete line of machine screw sizes

Prompt delivery. Many special as well as standard taps in stock.

Send for Catalog on company letterhead.

HY-PRO TOOL CO.
New Bedford, Mass., U.S.A.

LONG-LIFE PLUG GAGE

REVERSIBLE plug gage of Norbide is said to eliminate wear tolerances. Plugs reverse quickly in a positive-locking, pin-vise handle made of aluminum for reduced weight. The gage is said to have extraordinary service life. "Go" end is finished in green, "No-Go" in red. *Size Control Co., division of American Gage Machine Co., 2500 Washington Blvd., Chicago 12, Ill.*

SEAMLESS WELDING PIPE FITTINGS

NEW line of controlled quality seamless welding pipe fittings consists of 90° and 45° elbows, 180° return bends, straight and reducing tees, reducers, caps, lap joint stub ends, saddles, shaped nipples, crosses and tees in carbon steel, in sizes up to 30 inches. In addition to being manufactured in accordance with recommendations of the A.S.A. and other standards this line is featured by tapered tee design with reinforced center sections and crotch. Ten-page folder, giving dimensions and approximate weights, available. *Ladish Co., Cudahy, Wis.*

NEW WORK GLOVE

LONG wearing qualities, greater gripping power and increased protection are claimed for this Super-Canton work glove on the basis of abrasion and coefficient of friction tests by an independent laboratory. The glove is said to be soft, flexible, and water-repellent, with a non-slip surface. *Riegel Textile Corp., 342 Madison Ave., New York 17, N. Y.*

(*Please turn to page* 166)

It Says "Giddap" to 2500 Horses...

THIS gear is used in an inertia starter. It has to kick over a heavy aircraft engine until the pistons go to work. For this grueling application, alloy steel is a must.

Note the machining required. Then multiply it by a production quantity. As with every production application, machinability becomes a must, too.

That's why Frasse stocks 11 medium-carbon alloy steels in only one condition—*annealed.* You've alloy properties galore to choose from when you work from Frasse stocks. But no matter what the analysis, it has been treated for faster, easier machinability, and for uniform structure.

There's no fear of non-uniformity when you use Frasse alloys. You get the same machinable structure with every order. Standardize, for warehouse alloy steels, on Peter A. Frasse and Co., Inc., 17 Grand Street, New York 13, N. Y. (Walker 5-2200) • 3911 Wissahickon Avenue, Philadelphia 29, Pa. (Radcliff 5-7100) • 50 Exchange Street, Buffalo 3, N.Y. (Washington 2000) • Jersey City • Syracuse • Hartford Rochester • Baltimore

FRASSE

for Alloy Steels

A 3135	X 4340	A 6150
A 3140	A 4615	A 8620
X 4130	A 6145	A 8740
A 4150		A 8742

GET THIS HANDY ALLOY CHECK CHART

New Frasse check chart lists heat treat procedures for 60 popular alloy steels. Includes temperatures for hardening, annealing, normalizing, carburizing. Also covers cooling media and tempering ranges. Send the coupon for your free copy today.

Peter A. Frasse and Co., Inc.
17 Grand Street, New York 13, N. Y. 48A

Please send me a free copy of your alloy heat treatment check chart, Section D, No. 3.

Name:.....

Firm:.....

Address:.....

TO PUSH, PULL, LIFT OR LOWER HEAVY DUTY JOBS

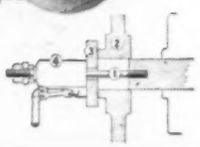
SIMPLEX HYDRAULIC JACKS AND JENNYS GIVE EXTRA STRENGTH, SAFETY AND VERSATILITY

Strength, safety and versatility—you get all three when you use Simplex Hydraulic Jacks for shop and factory jobs; or when you use the Simplex-Jenny to make difficult pulling operations the work of minutes instead of hours. Every Simplex Hydraulic Jack and Jenny is pre-tested to 50% more than rated capacity.

Use the Simplex-Jenny Center Hole Puller to get hydraulic ease of operation on such difficult jobs as pulling wheels, gears, propellors, cylinder shafts and boiler tubes. It's the "center hole" principle of the Simplex-Jenny that makes it possible to drastically shorten the time usually required for those jobs. The Simplex-Jenny also serves as a press or for conventional jack work.

SIMPLEX-JENNY CENTER HOLE PULLER

Saves time, saves manpower on tough pulling jobs.



USE THIS COUPON FOR 30-DAYS FREE TRIAL

Try the Simplex Hydraulic Jack or Jenny in your own plant—FREE. Jacks are available in 3, 5, 8, 12, 20, 30, 50, and 100-ton capacities; Jennys are 30, 60, 80, or 100-ton capacities. Name the one that suits your needs and we'll send it without obligation for a 30-days free trial.

☐ Send_____ton Simplex Hydraulic Jack on trial
☐ Send_____ton Simplex-Jenny on trial.
Send illustrated bulletin on_____Jacks_____Jennys
Name_____
Company_____
Address_____
City_____ Zone____ State_____
Nearest Jobber_____

Simplex
LEVER • SCREW • HYDRAULIC
Jacks

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Chicago 44, Illinois

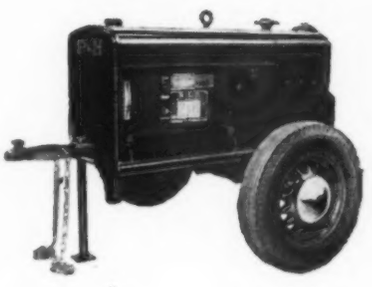
PILLOW BLOCK BEARINGS

PRENTICE self-aligning Pillow Block bearings, with porous bronze bearing surrounded by felt oil reservoir, are said to provide adequate lubrication at all times. The bearings are self-aligning although anchored in place, according to the manufacturer, and closer tolerances plus use of new alloys give longer life. Available in stock sizes ⅝", ¾", ⅞", 1" and 1 3/16". Other sizes from ½" to 1⅛" made to order. Distributed by *Western Thermal Equipment Co., 1701 W. Slauson, Los Angeles, Calif.*

COATING PROLONGS TANK SERVICE

CARBO tank coatings are designed to provide protection and durability for storage tanks and tank cars during loading, shipping, unloading, and cleaning. Maker states coatings give high resistance to gasoline, oils, greases, the elements, caustics, acids, etc. They are said to be fully suspended and non-bleeding and resistant to abrasion and to temperatures up to 300° F. Standard colors are black, white, gray and aluminum. Application may be by troweling, brushing, or spraying. *Carbozite Protective Coatings, Inc., Greensburg, Pa.*

PORTABLE WELDER



SELF-POWERED arc welder, is designed for shop, yard or field service. Known as P&H Model WN-200, stationary or trailer unit, it is an N.E.M.A. rated machine of 200 amp, but has a welding range of from 30 to 260 amp. There is one control for any desired welding heat from minimum to maximum capacity. Arc response is automatic on all classes of work and all types of electrodes. Both types have engine and welder mounted on an all-welded frame of steel tubing and heavy angle iron. Trailer model has running gear of standard truck width. *Harnischfeger Corp., Welding Division, 4400 W. National Ave., Milwaukee 14, Wisc.*

Built to give you MORE RECAPS!

THE GREAT U.S. ROYAL FLEETWAY

MORE RUGGEDNESS. Not only does exclusive *Safety Bonded Cord construction* give the Fleetway greater strength and longer life . . . but two extra cord plies under the tread guard against sudden impacts, while "Ventilating Windows" prevent extreme heat build-up on long hauls.

MORE QUALITY. From its tough tread stock to its rugged body that *fights back* against shocks and bruises, the Fleetway is built with the top-flight quality that makes *all* U. S. Royals so safe, so durable, so *reliable*.

MORE MILEAGE. In every respect, the U. S. Royal Fleetway is designed and engineered for long, mile-eating service. And because of the extra strength under its tread it can be recapped again and again . . . adding even *more* miles to its useful life.

MORE RECAPS *mean more mileage! That's why the U. S. Royal Fleetway gives you many MORE miles—at lower cost PER mile!*

GIVES YOU MORE MILES PER TIRE —LESS COST PER MILE

U. S. ROYAL *Fleetway*

U.S. ROYAL TIRES

TWO MORE WAYS TO GET LONGER MILEAGE AT LOWER COST

USCAP for Quality Recaps

USCAP is the exclusive "U. S." controlled system of recapping—developed by "U. S." for *better*, longer-running recaps.

Fleet Service for Extra Miles

By placing all the facilities of the U. S. Fleet Service at your disposal, your U. S. Distributor gets more miles from *all* your tires.

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"... and this, gentlemen, was when we installed the General Electric Water Coolers."

For new altitude records in employee morale, install General Electric Water Coolers. Refreshing, convenient, and so economical. See your General Electric Dealer today. *General Electric Co., Air Conditioning Dept., Section 7297, Bloomfield, N. J.*

GENERAL ELECTRIC

Water Coolers

A COMPLETE LINE OF INDUSTRIAL PETROLEUM PRODUCTS

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The Pure Oil Company, U. S. A.

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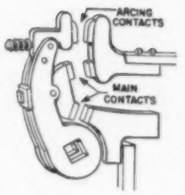
DOMORE CHAIR COMPANY, INC.
Dept. 712
ELKHART, INDIANA

DO/MORE

Seating Service

ELECTRICAL CONTACTS



NEW silver-molybdenum electrical contacts are said to have excellent arc resisting characteristics. There are two grades of the new contact material, Gibsiloy M-10 and M-12, the latter containing a higher percentage of molybdenum. M-2, with higher refractory content, is used on heavy circuit breakers where greater mechanical and electrical stresses are encountered; M-10 on smaller size circuit breakers handling lower pressures. Suitable for air or oil circuit breakers. They are furnished with solder backs. *Gibson Electric Co., 8359 Frankstown Ave., Pittsburgh 21, Pa.*

METAL TAGGING OUTFIT

PERMANENT identification of ferrous, non-ferrous or wooden products is said to be accomplished efficiently with this metal tagging and tag embossing outfit. Embossing type is set up and the tag is embossed with a light hammer blow, then placed in a fixture which bends it to fit over the hammer face and into clamps, at the same time punching a special nail through the tag. Placed on the 3 lb. hammer, the nail is driven into the steel billet or other object, metal or wood, with an ordinary hammer swing, permanently attaching the tag. *M. E. Cunningham Co., 154 Carson St., Pittsburgh 19, Pa.*

PRECISION FLOATING HOLDERS

COMPLETE line of all-steel precision floating holders of conventional design, in shank diameters of ⅝", ¾", 1" and 1¼", is said to provide a ready means for aligning drills, reamers and similar tools with the work. The cutting tool is held in the head of the holder, directly or by means of a bushing, and is clamped by a hardened steel set screw. One hinged-shoe bushing blank is furnished with each holder. Bulletin available. *Barnaby Manufacturing & Tool Co., 70 Knowlton St., Bridgeport, Conn.*

(*Please turn to page* 170)

ENGINEERS, for basic information about Sirvene, you may have a copy of "Engineering with Sirvene," free, by writing SIRVENE DIVISON, Dept. 1203.
Sirvene Serves
at the
HEART OF THE
MECHANISM

Wherever extraordinary or difficult operating conditions prevail, Sirvene pliable parts deliver dependable service at the very heart of the mechanism. They may control fuel intake, maintain delicate air pressure and fluid ratios, or provide an effective seal against mud, dirt, oil, water and other solubles. In each application Chicago Rawhide engineers custom-develop the Sirvene part from special formulae so that it meets exact specifications in design, elasticity or hardness, resilience, compression set, temperature resistance and tensile strength. Whenever your designs require unusual molded parts, investigate Sirvene first.

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1305 Elston Avenue Chicago 22, Illinois

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FORMS STEEL
for All Your Needs

In the hands and machines of our skilled engineers and workmen, sheet and plate steel assumes whatever form your business demands. We make bins, machine pans, stacks, breechings, tanks. Also chutes, guards, vats, machine bases, special metal parts. In 65 years we've really learned how to serve industry. Let us help *you!*

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446 E. Pearl St.
LITTLEFORD BROS., INC.
Cincinnati 2, Ohio

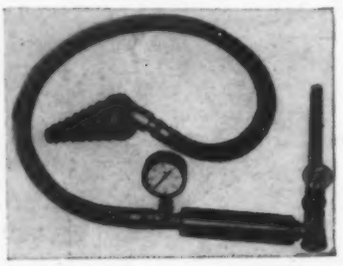
BALL-BEARING CENTERS

RED-E Standard Ball Bearing Centers are designed for use with high speed steel cutting tools. The new centers are available in both shank and ball and roller bearing types. New Departure double row angular contact preloaded precision ball bearings are said to maintain smooth operation, and provide thrust capacity 1½ times radial capacity. Center is of all-alloy steel construction with heat treated spindle. Accuracy claimed is within .0002" with point zero. Labyrinth enclosure is said to prevent entry of cutting oil or chips, or escape of lubricant. *Ready Tool Co., 555 Iranistan Ave., Bridgeport 5, Conn.*

BROACH SHARPENING MACHINE

COLONIAL FS3-36 Broach Sharpening Machine makes it possible for operators to sharpen flat surface broaches several feet long while seated. All controls are within easy reach of the operator. The length of the table is 48", with a 36" table travel. The grinding wheel can be operated at speeds from 4,000 to 10,000 rpm. *Colonial Broach Co., Box 37, Harper Station, Detroit, 13, Mich.*

REVERSE FLUSHING DEVICE

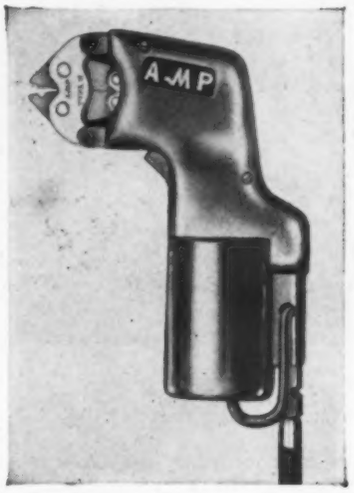


RADIATOR flushing attachment known as the Radi-Flush is especially designed for reverse flushing of automobile, truck, tractor and airplane radiators and blocks, using steam and chemicals for cleaning and reconditioning of such cooling systems. Equipped with the proper type of connectors it can be used for any cleaning purpose which requires flushing, according to the manufacturer. It is said that the Radi-Flush can be used in conjunction with a White. or similar type vapor steam cleaning machine. The system employs the steam generated by the vapor steam cleaner, in which the cleaning compound is mixed. The solution of steam and chemicals is reverse flushed under controlled pressure until the cooling system is clear. *White Engineering & Mfg. Co., 112 W. Passaic St., Rochelle Park, N. J.*

FLOCK FINISH SPRAY UNIT

FLOCK finish spray kit contains a patented blower gun, brown and ivory flock, brown Under Koat, thinner, a brush and instructions. The blower gun is said to distribute the flock evenly, blowing each fiber vertically into the undercoat. It requires no special skill in handling, and is applicable on phonograph turntables, cabinets, grills, instrument cases, tool boxes, etc. *General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.*

PNEUMATIC HAND TOOL FOR SOLDERLESS WIRE TERMINALS

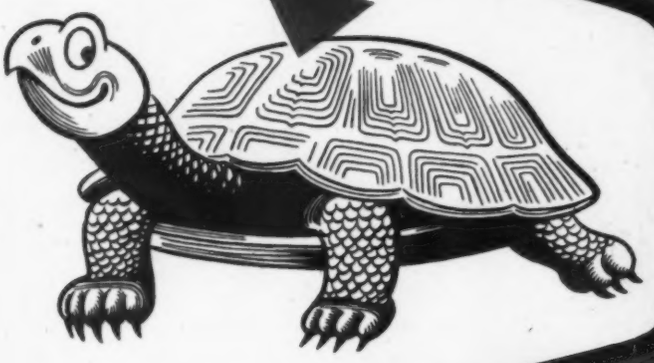


DESIGNED for production line assembly is this efficient pneumatic-powered hand tool that installs solderless electrical terminals with speed, uniform pressure, and precision of a power press. Tool is small enough to use in "tight" places and "hard-to-reach" jobs. It is made for wire sizes 22 to 14. Tool steel-crimping jaws are interchangeable for various types of solderless terminals. Toggle action employed provides 2000 lbs crimping pressure from 85 lbs air pressure with low air consumption. *Aircraft-Marine Products, Inc., 1575 N. Fourth St., Harrisburg, Pa.*

(*Please turn to page* 172)

HY-TEST *Safety Shoes*

PROTECTION



WHERE NEEDED

...Insure Workers Feet In Sure Protection

H-711—Men's Brown Glove Moccasin Oxford, Leather Sole, Half Rubber Heel. **Delivery at once.**

ANCHOR FLANGE STEEL BOX TOE

This flange adds extra strength to the steel arch's sidewall. Anchored between insole and outsole, it also serves to resist shifting and tilting when toe is struck at an angle.

Nature wisely provides the slow-moving turtle with a life-protecting shell. And just as wisely, the makers of Hy-Test Safety Shoes provide a shell of steel in Hy-Test Shoes to give *protection where needed.* This Anchor-Flange Steel Box Toe defies falling objects and other toe-injuring hazards. It is scientifically arched to take the blows . . . specially anchored to hold firm without shifting or tilting. This sturdy shell of steel is so smoothly patterned into Hy-Test's trim, neat lines you hardly know it's there.

Yet, like other outstanding features, it helps distinguish these shoes to make them preferred by more workers than any other safety shoe in America. Husky, pliant leathers, *Slant-eze* tops for ankle freedom, and quality workmanship throughout assure longer wear, extra comfort, and neat appearance in the safety shoe that gives *protection where needed.* Would you like to know how Hy-Test's plan can bring these shoes to workers in your plant? Just drop us a line.

HY-TEST SAFETY SHOES

HY-TEST *Safety Shoes*

THE WORLD'S LARGEST SELLING SAFETY SHOE

HY-TEST DIVISION • INTERNATIONAL SHOE COMPANY • ST. LOUIS 3, MO.
EASTERN OFFICE • MANCHESTER, N. H.

The transmission gear of Launderall completely automatic washing machines is made of Ampcoloy bronze to assure trouble-free service. Launderall is a product of F. L. Jacobs Co., Detroit, Michigan.
Gear-anteed
for a lifetime of Mondays

. . . with long-wearing Ampcoloy Continuous-cast Bronze

. . . in addition, Ampcoloy in continuous-cast rods and tubes provides production savings

Critical parts made of long-wearing Ampcoloy are a "quality" selling feature in any product.

There's added *economy* for you, when you use Ampcoloys in continuous-cast form (produced for Ampco by the American Smelting and Refining Company). The close tolerance and sound structure of continuous-cast rods and tubes can cut costs four ways:

1. Allows fast screw-machine production — a saving in manpower, time, and money.
2. Rejects and scrap loss due to metal flaws are practically eliminated.
3. Tools last longer because of a sand-free surface and no internal segregation.
4. Close size-tolerance reduces machining time, storing and handling of raw material, and waste.

Continuous-cast rods and tubes are available in a variety of Ampco alloys, and a range of diameters and lengths. For complete information, write for Bulletin 69.

AMPCO

Ampco Metal, Inc.

Department P-7 Milwaukee 4, Wis.

Field offices in principal cities

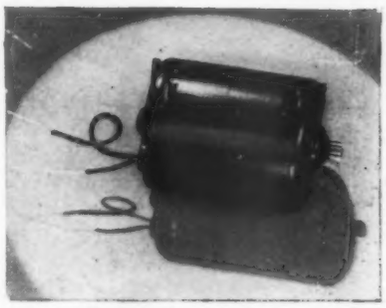
Specialists in engineering, production, finishing of copper-base alloy parts.

A-38

20-TON HYDRAULIC PRESS

ALL-STEEL welded 20-ton gap frame hydraulic press for production, tool room and general shop use, occupies 18″ x 36″ floor space. It has 8″ of throat, 12″ stroke, and a platen 12″ x 17″. A stroke selector enables operator to adjust stroke length quickly by tightening thumb screw. Hard chrome finished ram, tonnage control adjustable up to 20 tons, pressure holding valve and fast ram speed are other features. The press is motor driven with pressure gauge at eye level, and may be had with foot or hand control. It is adapted to all metal forming operations as well as for drawing, bending, straightening, forcing, riveting, crimping, piercing, staking and assembly. *Northern Tool and Machine Co., 1120-24 North 31st Ave., Melrose Park, Ill.*

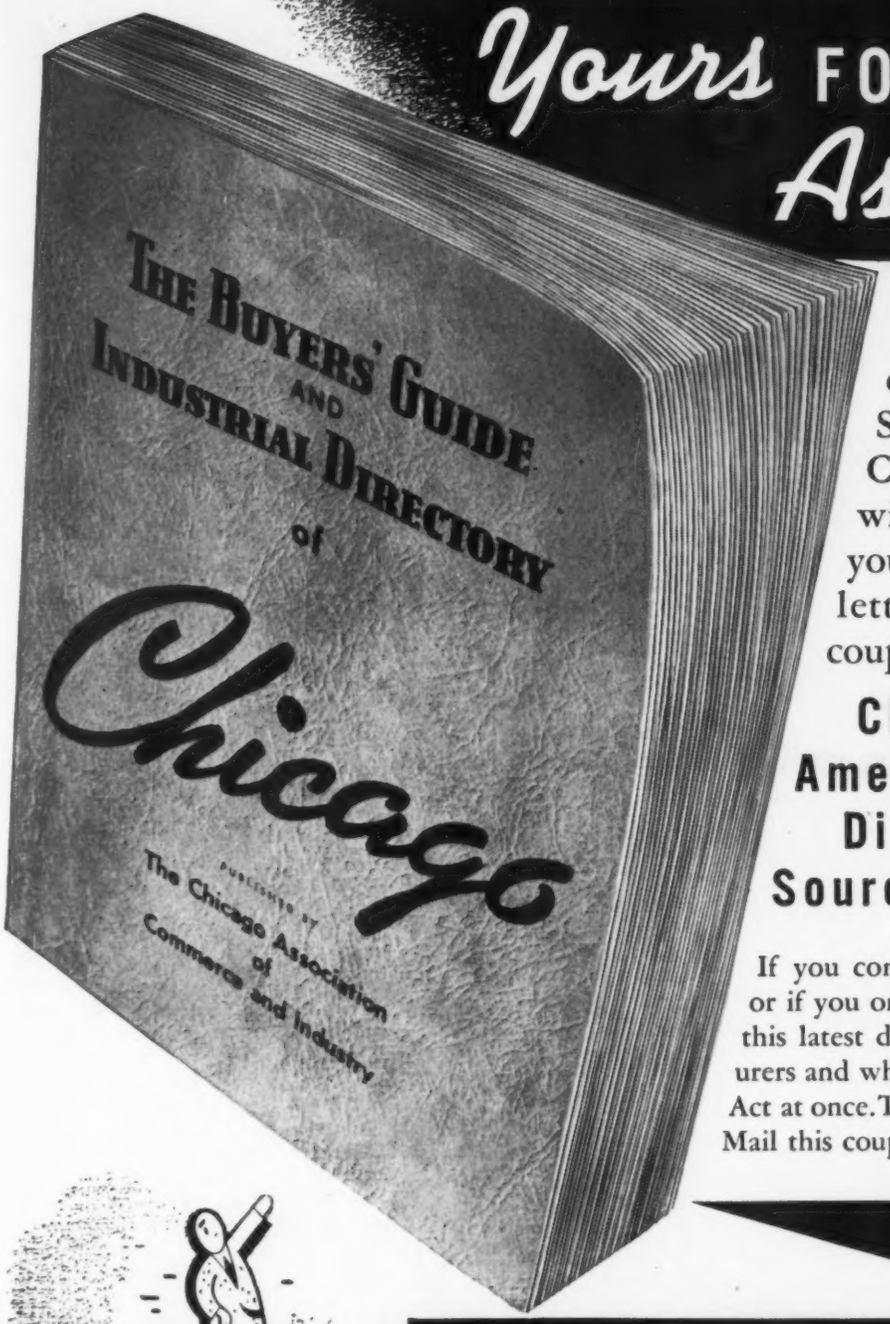
UNIVERSAL MOTOR



UNIVERSAL motor, Unit 597 is designed for household, commercial and automotive electrical appliances, can be wound for ratings of 1/20, 1/40 and 1/70 horsepower at 117 volts, and for 6-volt operation. Overall dimensions are 3-1/4″ by 2-7/32″, weight 14 oz. The 1/20 hp motor is rated at 4.0 inch-ounce torque at 12,700 rpm speed; the 1/40 hp motor at 3.0 inch-ounce torque at 8,400 rpm speed, and the 1/70 hp motor at 2.5 inch-ounce torque at 5,800 rpm speed. *Fairchild Camera and Instrument Corp., 88-06 Van Wyck Blvd., Jamaica 1, N. Y.*

(*Please turn to page* 174)

Yours FOR THE Asking!



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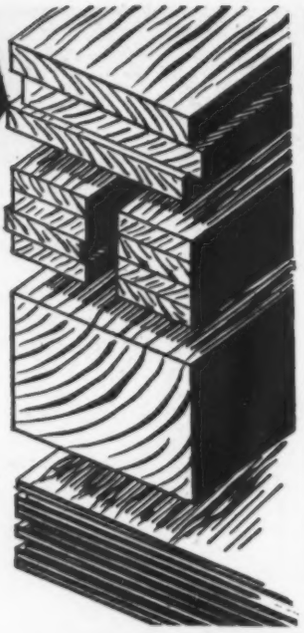
PATTERN,— CRATING LUMBER
TIMBERS ★ PLYWOOD



Here's Lumber Service Made to Order

Pattern Lumber — from old growth logs. Select quality, Mahogany, White Pine, Kiln-dried in our own plant. Cut to length.

Crating Lumber — for safe, economical shipments. Lengths, thicknesses practical for your purpose.

Timbers — from the tall fir country. Cut, trimmed to your needs. Teco Connectors, timber engineering data.

Plywood — wide variety of sizes, kinds, laminations. For interior, exterior use. Ideal for patterns. Your one order gets the attention of all three of these big lumber suppliers.

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LUMBER COMPANY

Sherlock Holmes seldom made mistakes. Maybe you don't, either, but it's good to know that when you *want* to erase, you *can* on PEL-X Water Repellent Tracing Cloth — without detection!

Rugged resistance to repeated erasure is only part of the story. You also get cleaner, sharper reproductions, true to scale and free from feathered lines, fog or cloudiness. *And* you get this more quickly, with less eyestrain — because PEL-X is truly *transparent*. Ask your dealer for PEL-X today!

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WITH A CAPITAL "E" FOR EXCELLENCE

FOR BETTER PLANS . . . Better Plan on PEL-X Tracing Cloth

WHITE PENCIL PEL-X WATER REPELLENT TRACING CLOTH

Current Holliston Production includes: TRACING CLOTHS, COATED and IMPREGNATED FABRICS, INSULATING CLOTH BASE, SEPARATOR CLOTHS, MAP CLOTH, PHOTO CLOTH, REINFORCING FABRICS, SIGN LABEL and TAG CLOTHS, BOOKBINDING CLOTHS, SHADE CLOTH.

THE HOLLISTON MILLS, INC. Norwood, Mass. CHICAGO · NEW YORK

APPLIANCE TRUCK

ENTIRE weight of load of Easload appliance truck is said to always rest on 10-inch wheels. When the truck is erect the wheels lock in a forward position for loading, and as the load is picked up they swing back and lock in a carrying position. Small rubber wheels under toe plate facilitate loading and unloading. Rounded-ended handles permit sliding over steps, down ramps, off and on shipping platforms, delivery trucks, etc. Rubber frame protectors guard against marring of load. Construction is of welded steel tubular frame. Weight 64 lbs. Capacity 2000 lbs. *Colson Equipment & Supply Co., Los Angeles, Calif.*

4-JAW INDEPENDENT CHUCKS

EIGHT-INCH medium duty and 6" heavy duty 4-jaw independent chucks for small lathes have bodies of semi-steel castings. The jaws are steel, the steps hardened and ground, and there are heat-treated steel screws. Wrenches are furnished. Available also for these chucks are adapter back plates with 1½"-8 thread suitable for some models of Atlas, South Bend and Logan lathes, and rough adapter back plate castings which can be machined to requirements. *L-W Chuck Co., 38 S. St. Clair St., Toledo, O.*

NYLON CABLE

STRENGTH, flexibility and wearability are claimed for Danco nylon cable. Two sizes are available, 6/32" and 7/32" OD, both consisting of a 3/32" aero steel wire rope, of 920 lbs break test, impregnated with extruded nylon. The cable is said to withstand 320,0000 flexings before the steel core breaks, and 410,000 before the nylon severs. It is also said to be highly resistant to oils, acids, moisture, salt water, friction and fire. Maker states it will not fray, rust or rot. *Danielson Mfg. Co., Danielson, Conn.*

(*Please turn to page* 176)

This huge aircraft plant, roofed and sided with "Century" Asbestos Corrugated, will withstand a lifetime of service without maintenance or deterioration.

ASBESTOS IN ACTION

"Century" Asbestos Corrugated is easy to drill and cut on the job.

WHAT OTHER SHEATHING MATERIAL GIVES YOU ALL THESE ADVANTAGES?

If you're planning some new industrial construction, or remodeling, it will pay you to look into the advantages of K&M "Century" Asbestos Corrugated. Compare these features with those of any other roofing and siding material:

1. FAST, ECONOMICAL CONSTRUCTION—19 available sheet sizes speed up installation. New "Topside" fasteners eliminate costly scaffolding on roof jobs, as *all* fastening can be done from atop the roof's surface.

2. STRUCTURAL STRENGTH—"Century" Asbestos Corrugated withstands severe stresses, such as snow loads, other common conditions.

3. IMMUNITY to fire, weather, rust, corrosion, galvanic action. Being made of asbestos and cement, "Century" Corrugated cannot fall victim to these damaging forces.

4. ATTRACTIVE APPEARANCE—pleasing light gray color provides attractive, modern appearance . . . banishes that forbidding "gloom" so characteristic of many industrial plants in the past.

5. FREEDOM FROM MAINTENANCE—"Century" Asbestos Corrugated never needs painting, is highly resistant to oil, acids, brine, other destructive agents.

•

Truly, here is the material adapted to today's industrial construction needs. You'll find it ideally suited to the job you have in mind. If you'd like to know more about it, just write us—we'll give your inquiries prompt consideration.

Nature made Asbestos
Keasbey & Mattison has made it serve mankind since 1873

K&M best in asbestos

Reg. U. S. Pat. Off.

KEASBEY & MATTISON

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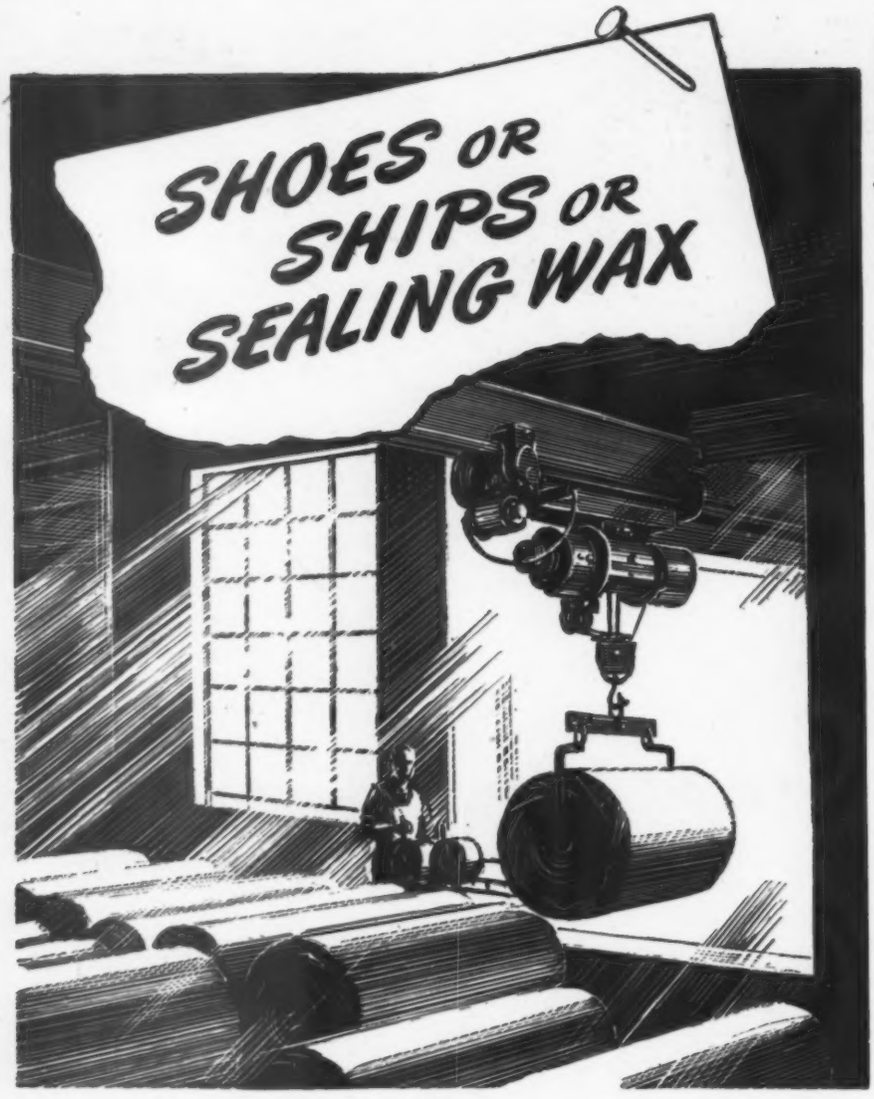


Regardless of what you make, it's safe to assume you have the problem of lifting, moving and depositing raw materials, semi-finished or finished products. Where such loads involve weights from 1/8 to 20 tons and where they must be handled smoothly, easily, economically and efficiently, consider the advantages of Shepard Niles hoists.

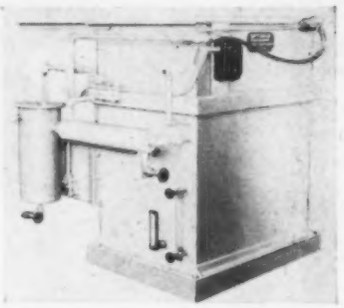
America's oldest builder of electric hoists and cranes offers you more than 5,000 styles and sizes from which to make your selection. Without obligation on your part, trained, experienced Shepard Niles engineers will study your requirements and recommend the hoist most suitable for the job.

Shepard Niles
CRANE & HOIST CORPORATION

Moving heavy loads, indoors or out, is no job for human muscles or inefficient handling equipment. If you want to extend your improvements in shop practice to material handling, ask Shepard Niles engineers to assist you in selecting the electric crane to handle your loads with speed, safety and economy.

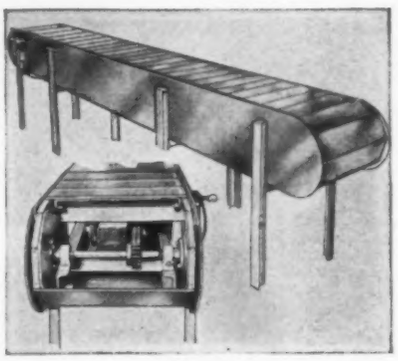
462 SCHUYLER AVENUE • MONTOUR FALLS, N. Y.

METAL PARTS DEGREASER



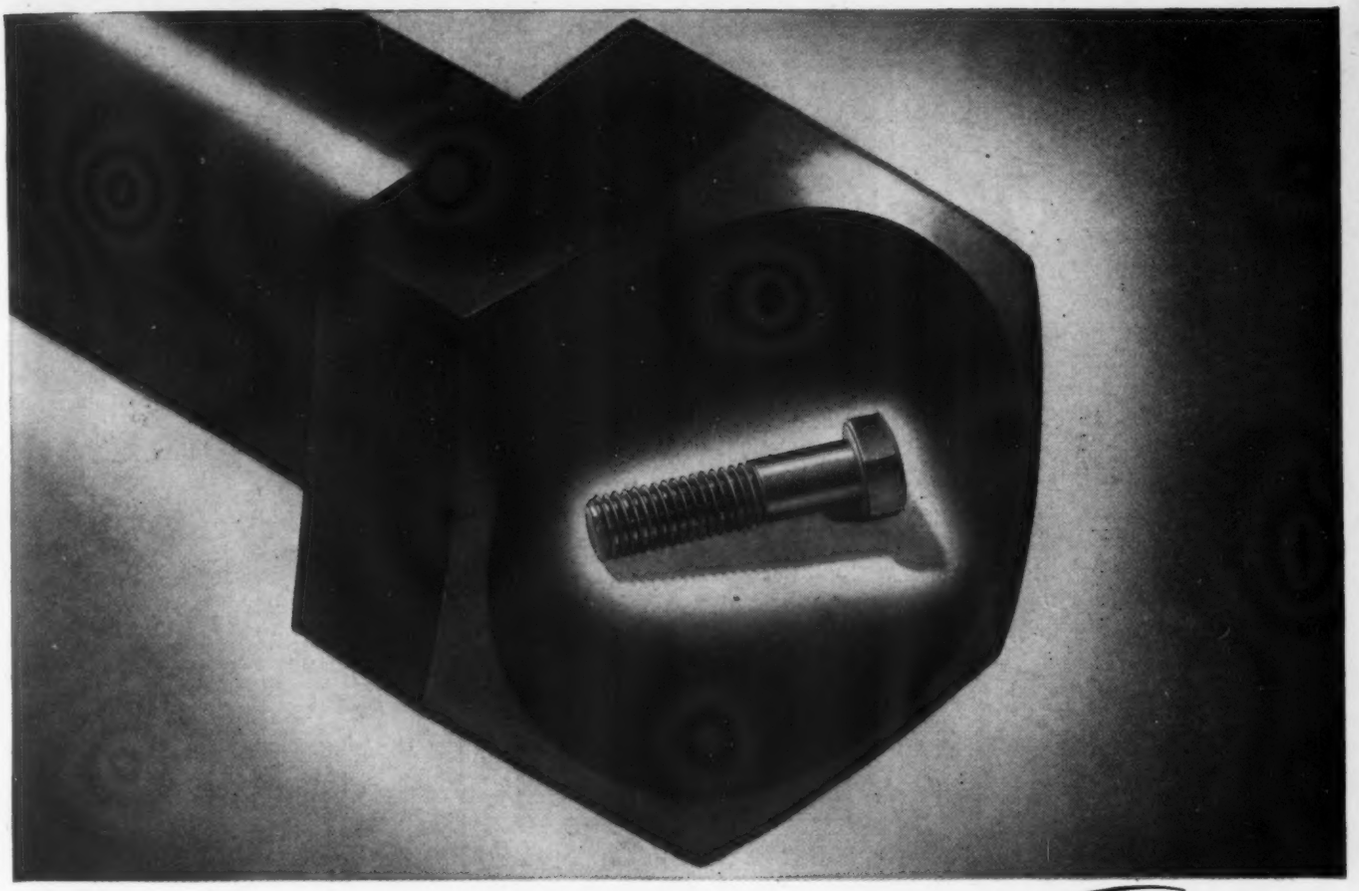
VAPOR-SPRAY type metal parts degreaser OP-1-48, designed for use with trichlorethylene, acts as a still to recover contaminated solvent, providing continuous supply of pure distilled solvent for spray and for vapor uses. Hand spray line of woven metal hose provides for removal of chips and insoluble impurities and buffing compounds worked into corners or crevices. Heat to vaporize the solvent may be supplied by either steam, gas or electricity. Automatic vapor and temperature control are optional accessories. Its work clearance is: 45″ long, 27″ wide; overall dimensions —48″ wide, 48″ long, 60″ high; capacity —200 lbs of steel per hour. *Optimus Equipment Co., 141 Water St., Matawan, N. J.*

ALL-ALUMINUM CONVEYOR



PRE-FABRICATED Mercury belt conveyor has all components constructed of heat treated aluminum alloy, and is said to be rust and corrosion proof and resistant to most acids, chemicals, and fumes. Conveyors are available in widths from 6″ to 60″, and heights from 15″ up; standard height is 36″. They are shipped in 5 ft. sections which may be assembled in continuous units up to 150 ft. They are capable of any speed up to 100 ft. per minute; have a load capacity of 250 lbs. per sq. ft.; pulling load 6,100 lbs. The belt is supported by phenolic rollers, 8 to each foot. Belt sections are 1/8″ thick, 4½″ long. Standard equipment includes speed reducer, drive, pillow blocks, take-ups, shafts and electric reversible control. Conveyor has drive, V-belt, motor to speed reducer, chain drive to head shaft; anti-friction. *Patron Transmission Co., Dept. 70, 129 Grand St., New York, N. Y.*

(*Please turn to page* 178)



WHEN YOU GET MAXIMUM HOLDING POWER PER DOLLAR OF INITIAL COST . . THAT'S **t.f.e.** True Fastener Economy!

It's the cost of *using* a fastener that counts. Wherever maximum fastener strength is required . . . such as for engines and machine tools . . . it is *T*rue *F*astener *E*conomy to specify high-quality Cap Screws.

R B & W *Cap Screws for Utmost Security*

Raw material that is subjected to the most rigid mechanical and physical examination . . . cold-forming on the most modern machinery . . . continuous inspection at every stage of manufacture . . . contribute to your assurance that RB & W Cap Screws will have uniformly high physical properties and a finish that enhances the appearance of the finished product.

Such facilities as spheroidizing furnaces, close control heat treating, finest heading and threading equipment enable R B & W to manufacture its products to meet the severe stress conditions and close tolerances required of highest quality Cap Screws.

You Get T. F. E. *When You*

1. Reduce assembly time to a minimum by savings through use of accurate and uniform fasteners
2. Make your men happier by giving them fasteners that make their work easier
3. Reduce need for thorough plant inspection, due to confidence in supplier's quality control
4. Reduce the number and size of fasteners by proper design
5. Purchase maximum holding power per dollar of initial cost, by specifying correct type and size of fasteners
6. Simplify inventories by standardizing on fewer types and sizes of fasteners
7. Save purchasing time by buying larger quantities from one supplier's complete line
8. Contribute to sales value of final product by using fasteners with a reputation for dependability and finish

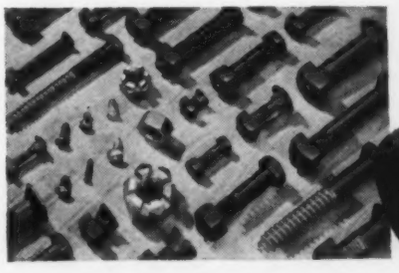
RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

102 years making strong the things that make America strong

RB&W bolts, nuts, screws, rivets and allied fastening products are manufactured in a broad range of styles, sizes and finishes.

• • •

Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Detroit, Chicago, Chattanooga, Portland, Seattle. Distributors from coast to coast. By ordering through your distributor, you can get prompt service from his stocks for your normal needs. Also—the industry's most complete, easiest-to-use catalog.



Thousands of Jelliff baskets of all sizes, give unusual service under a wide variety of conditions. Jelliff baskets are designed and engineered to provide maximum performance and economy on the job. Special types can be produced to specifications in the Jelliff plant with its complete facilities for drawing, weaving and fabricating. Available in aluminum, brass, copper, monel, steel, stainless nickel and other metals and alloys.

Write DEPT. 208 For Literature

DIPPING BASKETS • LEKTROMESH • RESISTANCE WIRE • WIRE MESH PARTS • WIRE CLOTH • STRAINERS • FILTERS

The C. O. JELLIFF MANUFACTURING CORPORATION

SOUTHPORT, CONN.

WIRE PRODUCTS Jelliff SINCE - 1880

SQUARE GAGE BLOCKS

FULL range of sizes is available in square gage blocks of Lifetime-Carbide. Grade "A" (± .000004"), and Grade "B" (±.000008") quality are made in sets and sizes formerly available only in rectangular style. Individual blocks range in size from .050" to 4.000", and complete sets are made up of 35 and 82 pieces. Special sizes will be made upon individual quotation, according to manufacturer. *Fonda Gage Co., Stamford, Conn.*

DIE HANDLER ASSEMBLY

ILLUSTRATION shows the new die handler assembly built into a Mercury "Mogul" 5-ton High Lift chassis. It can also be furnished on 3-ton chassis in either high or low lift models. This design consists of two power driven movers, operating in machined slots at the sides of the load platform. The assembly makes it possible for the operator to quickly and easily push the die from the load platform onto the press or storage rack or vice-versa. Independent control of the die movers facilitates accurate die spotting. *Mercury Mfg. Co., 4136 S. Halsted St., Chicago, Ill.*

WATER LEVEL CONTROL

CHANGES in water level are transmitted to the switching mechanism by magnetic action in this new boiler water level control, which is said to provide a dependable method of pump control, low water fuel cut-off, and low water alarm. There is no mechanical or electrical connection between pressure chamber and switching mechanism. Model #126 for pressure up to 125 lbs. and #251 up to 250 lbs. feature Type S "Unitary" switching mechanism completely self-contained with mercury switch, magnet, lead wires and terminal strip built into a single unit. *Magnetrol, Inc., division of Fred H. Schaub Engineering Co., Inc., 2110 South Marshall Blvd., Chicago 23, Ill.*

(*Please turn to page* 180)

MECHANICAL RUBBER PRODUCTS COMPANY

733 E. 150th Street, New York 55, N.Y.

Can Supply Your Rubber Needs

Sponge Rubber, Gaskets, Packing, Sheet Stock, Gloves, Extrusions, Moldings

NEOPRENE • HYCAR • BUNA S. • BUNA N. • GUM RUBBER •

Quality you can depend on!

SIMONDS GEARS

Any material—heavy types! Spur · Bevel · Mitre · Helical · Worm · Worm Gears · Racks—in cast or forged steel, gray iron, bronze, silent steel, rawhide or bakelite. Over 50 years' experience!

Also distributor for RAMSEY Silent Chain Drives and Couplings. Send us your inquiry today!

THE SIMONDS GEAR & MFG. CO.

LIBERTY at 25TH

PITTSBURGH 22, PA.

MORE LIGHT FOR YOUR MONEY with G-E Mercury Lamps

TYPE A-H1
GENERAL ELECTRIC
MERCURY LAMP

LIGHT is a vital production tool. Better seeing means better workmanship, fewer accidents, higher plant morale. Now, with General Electric mercury lamps, proper industrial lighting levels can be maintained more economically than ever before.

Here are three reasons why G-E mercury lamps assure you *lowest cost of light:*

1. **HIGH EFFICIENCY**—Initial light output 40 lumens per lamp watt.
2. **LONG LIFE**—Up to 6000 hours rated life, depending upon wattage and number of starts.
3. **SUSTAINED LIGHT OUTPUT**—Lamps still produce 35 lumens per watt at 70% of rated life (burned 5 hours per start).

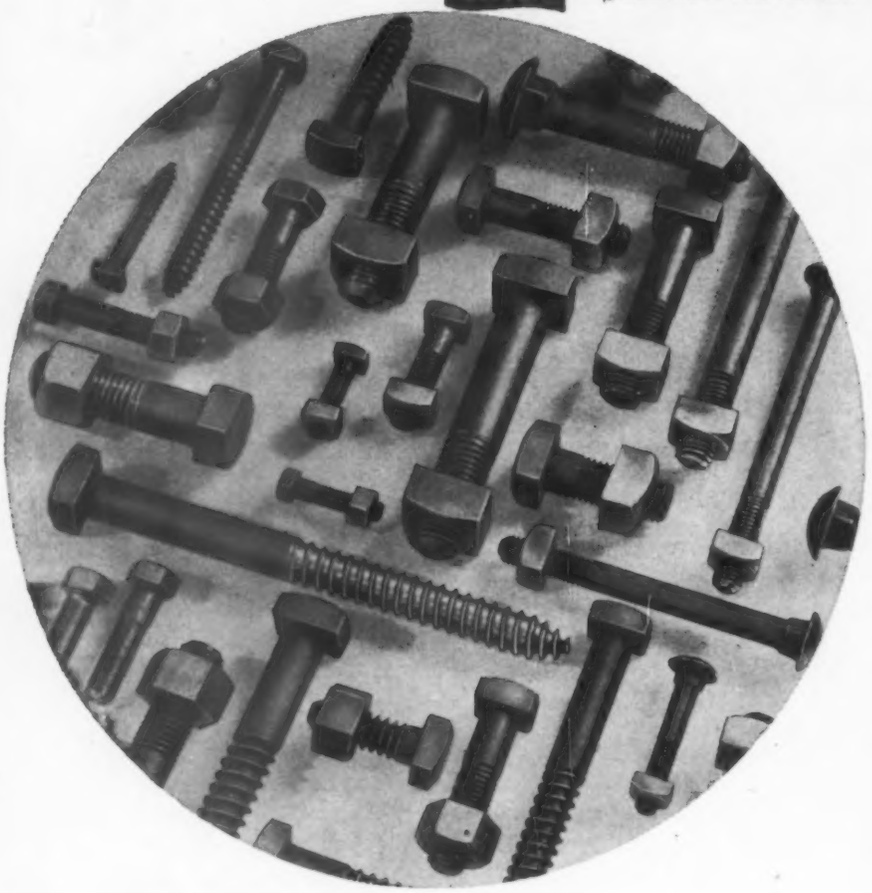
G-E mercury lamps are available in sizes from 100 watts to 3000 watts, for installation in a variety of fixtures. They combine well with filament lamps, installed on alternate staggered outlets. For full information, call your nearby G-E Lamp district office. or write for new booklet. General Electric Company, Dept. P-7, Nela Park, Cleveland 12, Ohio.

G-E LAMPS

GENERAL ELECTRIC

Average illumination of 40 foot-candles is maintained in this large machine shop by alternate staggered twin 400-watt mercury lamps and 1500-watt filament lamps. Mounting height 40 feet.

OLIVER a good name in FASTENERS



You NEED correct types and sizes

You DEMAND highest quality

OLIVER PROVIDES BOTH!

Industrial fasteners—bolts, nuts, rivets, screws—are so vital in modern fabrication processes that their selection is a very important matter. You need the types and sizes that fit your particular requirements—you insist on highest quality, accuracy and uniformity because there is no need to accept less. And when you specify OLIVER, you get what you want!

See Your Industrial Distributor

OLIVER IRON AND STEEL Corporation

South Tenth and Muriel Sts. · Pittsburgh 3, Pa.

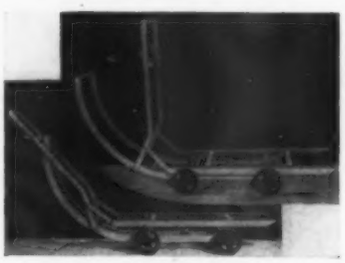
PIPE-STRAINER

"Y" type strainer is available in ⅛" through and including 2" pipe sizes. It comes in either cadmium plated rust resisting cast iron or all bronze construction. The strainers are built around 250-lb. standards for cast iron, and are suitable for 400-lb. service when furnished with bronze body. *A. W. Cash Valve Mfg. Corp., Wabash and Morgan, Decatur 60, Ill.*

DUSTING AND CLEANING DEVICE

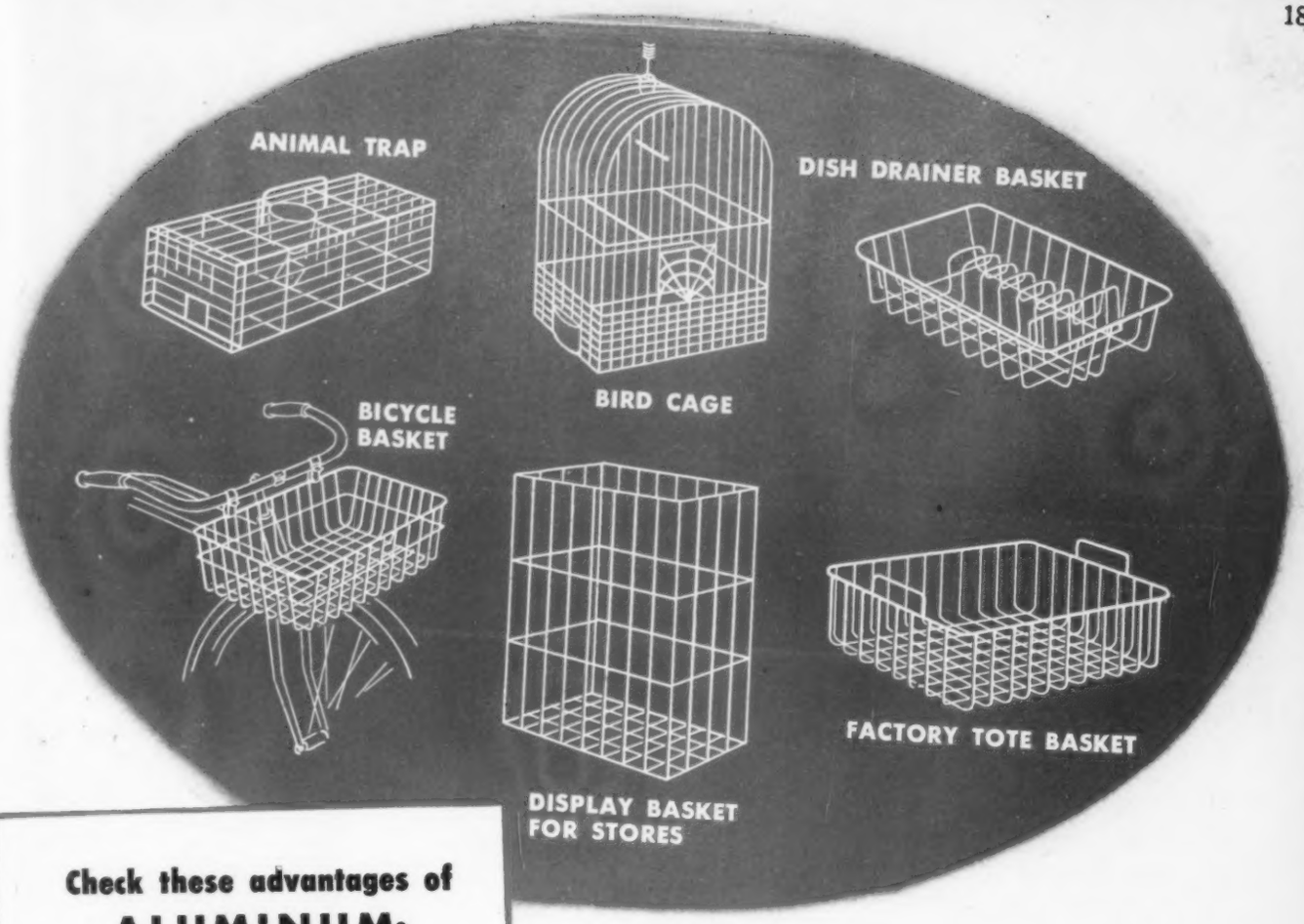
MODEL 11 Akar Kleaner consists of a 48" handle to which has been attached a flexible coiled spring and a replaceable double-sided textile head. It eliminates stooping, kneeling and climbing. Cleaner may be used to scrub and mop floors, wash walls, woodwork and ceilings, and to dust and oil surfaces, and is especially adapted for reaching hard-to-get-at places. *Kass-Harr Co., 559 W. 16th St., Chicago, 16, Ill.*

LIGHT HAND-LIFT TRUCK



NEW light hand-lift truck proves a useful handy-man for handling "short move" jobs involving loads up to a ton in factories, warehouses and transfer depots. Illustration shows how with platform lowered, the truck has ample clearance under a skid-box. An easy pull lifts load above the wheels, and locks securely. Overall length of the truck is 70"; platform area is 11-¾" by 43". *Arcade Mfg. Div., Rockwell Mfg. Co., Freeport, Ill.*

(*Please turn to page* 182)



Check these advantages of ALUMINUM:

● **Three for one**

One pound of aluminum produces *three* times as many feet of wire as a pound of brass, copper, steel, or stainless steel.

● **Corrosion resistance**

Aluminum does not rust or stain. Needs no painting to protect it.

● **Easy to work**

Aluminum can be fabricated on your present equipment.

● **Attractive appearance**

The pleasant, natural color of aluminum is desirable on many finished products. In addition, it can be economically colored in a wide variety of shades.

You can get it **NOW...**

ALCOA ALUMINUM

FOR WIRE GOODS

The aluminum wire you need is readily available from Alcoa—in the proper sizes, shapes and alloys.

Phone your nearest Alcoa sales office.

ALUMINUM COMPANY OF AMERICA, 1931 Gulf Building, Pittsburgh 19, Pa.
Sales offices in leading cities.

MORE people want MORE aluminum for MORE uses than ever

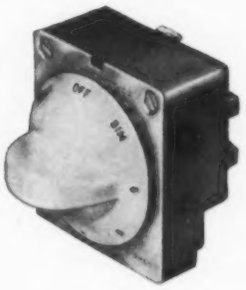
ALCOA FIRST IN ALUMINUM

IN EVERY COMMERCIAL FORM

Pick

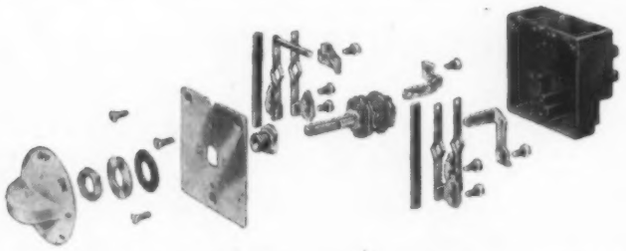
SWITCHES

FOR RUGGED, POSITIVE ACTION



Sturdy construction for dependable performance . . . *positive action every time* . . . through years of use and abuse. Top appearance, too — on the beam for sales appeal to the ultimate consumer. That's "Diamond H" electrical equipment.

The switch illustrated was designed principally for day-in, day-out service on household ranges. It has however, a host of other applications — from glue pots, corn poppers and hot plates to ovens, sterilizers and steam tables.



Eight position switch with heavy silver contacts. 15 A. 115 V. or 15 A. 230 V. A.C. Other range-type switches with 4 and 6 positions, or designed to meet your requirements.

Let us talk switches in terms of *your* requirements. We make a complete line. Ask about "Diamond H" pilot lights, convenience outlets and thermostats.

THE HART MANUFACTURING COMPANY
207 BARTHOLOMEW AVENUE, HARTFORD, CONN.

NEW CARBON SEAL

HIGH speed carbon ring oilseals are said to have a low coefficient of friction and self lubricating qualities for applications where lubrication is poor or where shaft rpm and resulting rubbing speeds are high. The entire assembly, known as the Gits "DMC" and "DPC" High Speed Carbon Faced Seals, is said to feature a sealing principle that eliminates wear on the shaft and the need for replacement of grooved shafts. Radial seal joint prevents leakage of liquids or gases under pressure or vacuum. The seals do not contact or wear shaft surface, but transfer wear to the radial seal joint. The seals can be applied to both horizontal and vertical shaft applications in many ways. *Gits Bros. Mfg. Co., 1846 South Kilbourn Ave., Chicago, Ill.*

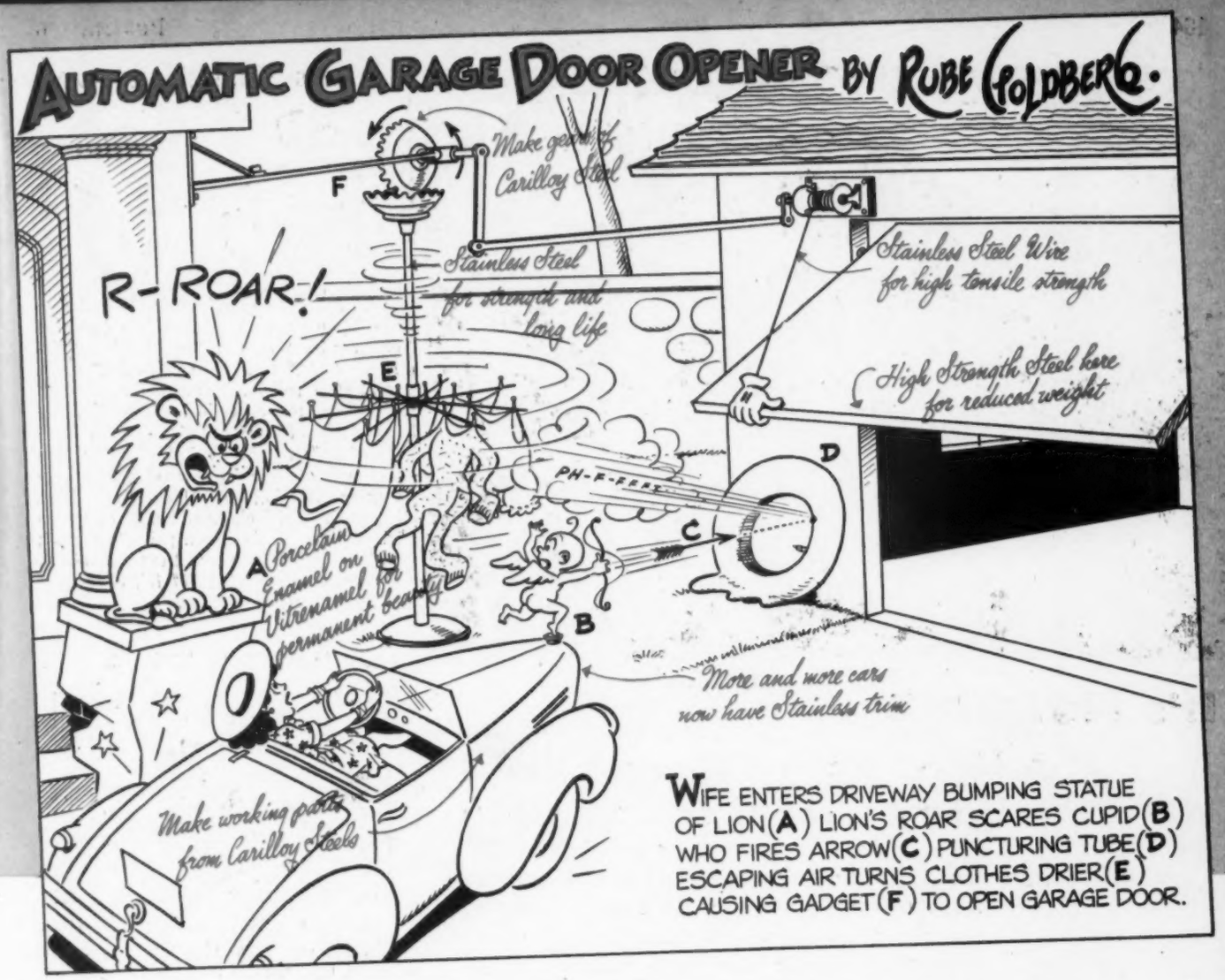
MOBILE DRUM HANDLER

MODEL No. 2 Barrel-Lift drum handler is said to offer simple one-man operation and long life. Features include new gusset-type lifting arms of heavy material, and one-piece stamped welded drum saddle. The unit serves to raise loaded drums from the floor, transport them where needed and tilt them to dispense contents. It weighs approximately 100 lbs and handles drums up to 750 lbs gross weight. *Falstrom Co., Box No. 118, Passaic, N. J.*

PNEUMATIC TIRE SPREADER

TIRE inspection and repair are said to be facilitated with the new Power Pak Pneumatic Tire Spreader which accomodates all types and sizes. Automatic foot controls are used for spreading the tire and pushing the lining out, and for restoring the tire to its original shape, leaving operator with both hands free for work. Cabinet dimensions: 31" high, 22" wide and 14" deep. Hose or pipe may be used for hook-up to any standard air compressor. *Power-Pak Products, Inc., Buffalo 2, N. Y.*

(Please turn to page 184)


AUTOMATIC GARAGE DOOR OPENER BY RUBE GOLDBERG.
Make gears of Carilloy Steel
Stainless Steel for strength and long life
Stainless Steel Wire for high tensile strength
High Strength Steel here for reduced weight
R-ROAR-!
PH-F-F-F-F-T
Porcelain Enamel on Vitrenamel for permanent beauty
More and more cars now have Stainless trim
Make working parts from Carilloy Steels
WIFE ENTERS DRIVEWAY BUMPING STATUE OF LION (A) LION'S ROAR SCARES CUPID (B) WHO FIRES ARROW (C) PUNCTURING TUBE (D) ESCAPING AIR TURNS CLOTHES DRIER (E) CAUSING GADGET (F) TO OPEN GARAGE DOOR.

WHILE Mr. Goldberg's suggestion for an automatic garage door opener may still need a little polishing, it *does* point out a significant fact to the design engineer . . . namely, that nine times out of ten, steel will do a better job. There are steels to withstand the severest range of temperatures; steels to resist shock, corrosion, severe bending and abrasion.

Steel has toughness for lightweight construction. It can be welded to perfection, riveted, punched. It can be polished to mirror surface . . . etched, painted or permanently coated with porcelain enamel. It can be drawn, formed, forged, cast, machined on a mass production basis.

Not only is steel the most versatile of materials, but when it is judged on the basis of performance, its economic superiority is outstanding.

To help you with your design problem—to give your product the many desirable properties that steel can contribute—the nation's largest organization of specialists in steel is ready to assist you.

CARNEGIE-ILLINOIS STEEL CORPORATION
Pittsburgh and Chicago

COLUMBIA STEEL COMPANY, San Francisco, Pacific Coast Distributors
TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham, Southern Distributors
UNITED STATES STEEL SUPPLY COMPANY, Chicago, Warehouse Distributors
UNITED STATES STEEL EXPORT COMPANY, New York

7-559

Have you explored the possibilities of these special purpose U·S·S Steels?

U·S·S STAINLESS AND HEAT-RESISTING STEELS to assure high resistance to corrosion and heat, and to reduce weight.

U·S·S CARILLOY STEELS—Alloy steels for the special jobs of industry.

U·S·S HIGH STRENGTH STEELS to resist atmospheric corrosion, to increase strength without adding weight or to maintain strength with reduced weight.

U·S·S COPPER STEEL to give at least twice the atmospheric corrosion resistance of regular steel at little additional cost.

U·S·S ABRASION-RESISTING STEEL to combat wear and friction.

U·S·S HOT-ROLLED AND COLD-ROLLED STEELS to provide the basic advantages of steel, plus maximum economy in each job.

U·S·S PAINTBOND—A galvanized, Bonderized sheet that permits immediate painting and holds paint tighter.

U·S·S VITRENAMEL—Sheets designed especially for porcelain enameling.

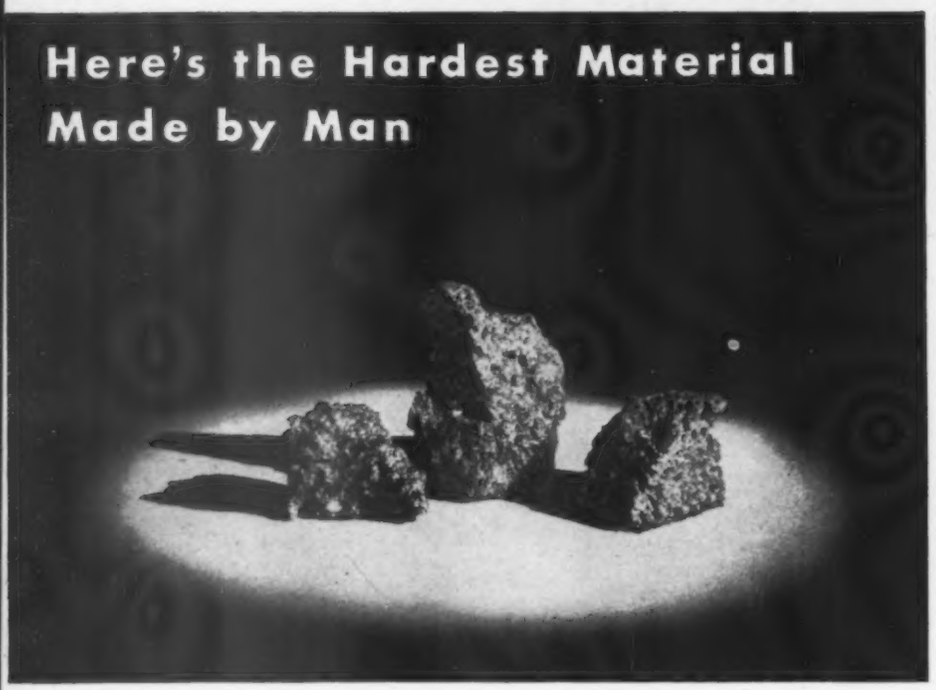
U·S·S ELECTRICAL SHEETS for motors, generators and transformers.

IT TAKES SCRAP TO MAKE STEEL . . . PLEASE TURN YOURS IN!

9 times out of 10 STEEL will do it better

USS STEEL UNITED STATES STEEL

UNITED STATES STEEL



It's NORBIDE*. . .

A Norton development that's mighty useful to industry

Perhaps its unique characteristics can be very helpful to you—as an **abrasive** for lapping superhard materials—in **molded form** where extreme resistance to wear is desired—or for **metallurgical** use as an alloying agent.

Norbide is the trade-mark for Norton Boron Carbide, a material produced by fusing two commonplace materials, boric acid and petroleum coke, in the electric furnace at terrific temperatures. It is harder than any material except the diamond.

Not only is Norbide* extremely useful as an abrasive but because it is self-bonding under high pressure at high temperatures it can be molded into a variety of products that are finding wide application for their exceptional resistance to wear and other unique properties.

The fascinating story *of Norbide products and their many interesting applications is described in catalog 378-C. Write for a copy.*

NORTON COMPANY, WORCESTER 6, MASS.
Behr-Manning, Troy, N. Y. is a Norton Division

*Registered trade-mark for Norton Boron Carbide

NORTON

ABRASIVES — GRINDING WHEELS — GRINDING AND LAPPING MACHINES
REFRACTORIES — POROUS MEDIUMS — NON-SLIP FLOORS — NORBIDE PRODUCTS
LABELING MACHINES BEHR-MANNING DIVISION COATED ABRASIVES AND SHARPENING STONES

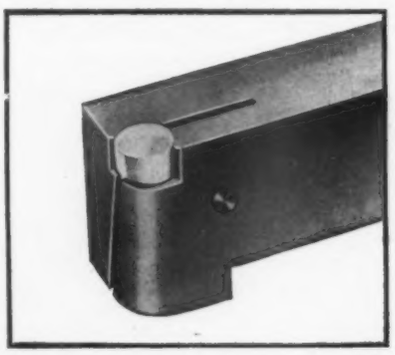
DOLLIES WITH EXTENSION BAR

"FIVE-TONNER" Skid Rol dollies are equipped with adjustable connecting bar, for loads up to 5 tons. Each dolly is 15¼" x 6⅛" x 4" high, with 3⅝" diam. solid steel rollers. Extension bar of ⅝" cold-rolled telescopes inside iron pipe, giving a pair of dollies minimum span overall of 36", maximum 56". Steel cleats, plug-welded, bite into wood skids, preventing slipping or shifting of load. Inverted, Skid-Rols can be used as standing dollies Obtainable in pairs or singly; with or without cleats and extension bars. *Techtmann Industries, 714 W. Wisconsin Ave., Milwaukee 1, Wisc.*

CONCENTRIC-ACTION SCREEN

INCLINED floor-mounted or spring-and-cable suspended vibrating screen has a specially balanced two-bearing vibrator mechanism which imparts a concentric or circular vibrating motion to all points of the screening surface. It is made with double or triple decks, in sizes from 3 x 8 ft to 6 x 14 ft, and can be used for medium and heavy duty sizing as well as for scalping and dewatering or rinsing operations. *Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.*

SOLID ROUND KENNAMETAL INSERTS



TOOLS with clamped-in solid round Kennametal inserts are said to greatly facilitate output on high production, repetitive jobs requiring complex tool set-ups. Designated Style 3RS (right hand) and Style 6RS (left hand), these

(*Please turn to page* 190)

Are you getting Maximum

Productive Power

FROM YOUR PLANT ELECTRICAL SYSTEM?

Up-to-date production machinery cannot be utilized fully with an obsolete power distribution system. Efficient methods of manufacturing demand modern electrical power supply and control.

Thus, getting *maximum* Productive Power from your plant electrical system is of vital concern to every key production man—as well as those directly in charge of electrical installations and maintenance.

On the next two pages you will find specific ways to make *electrical power more productive* —one or more of which can be put to profitable use in your plant.

FOR ANSWERS TO QUESTIONS LIKE THESE—TURN THE PAGE

1. What is the most flexible and economical distribution system to meet changing production requirements?
2. How is a large steel plant saving $1,500.00 per month in power costs?
3. How are automatic circuit breakers saving $2,000.00 per year in outage costs?
4. How can control centers improve continuous processing operations?
5. What type of power conversion has cut maintenance costs as much as 66%?

WESTINGHOUSE

Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

Proved ways to Make Electrical

TO SPEED PRODUCTION CHANGEOVERS . . .

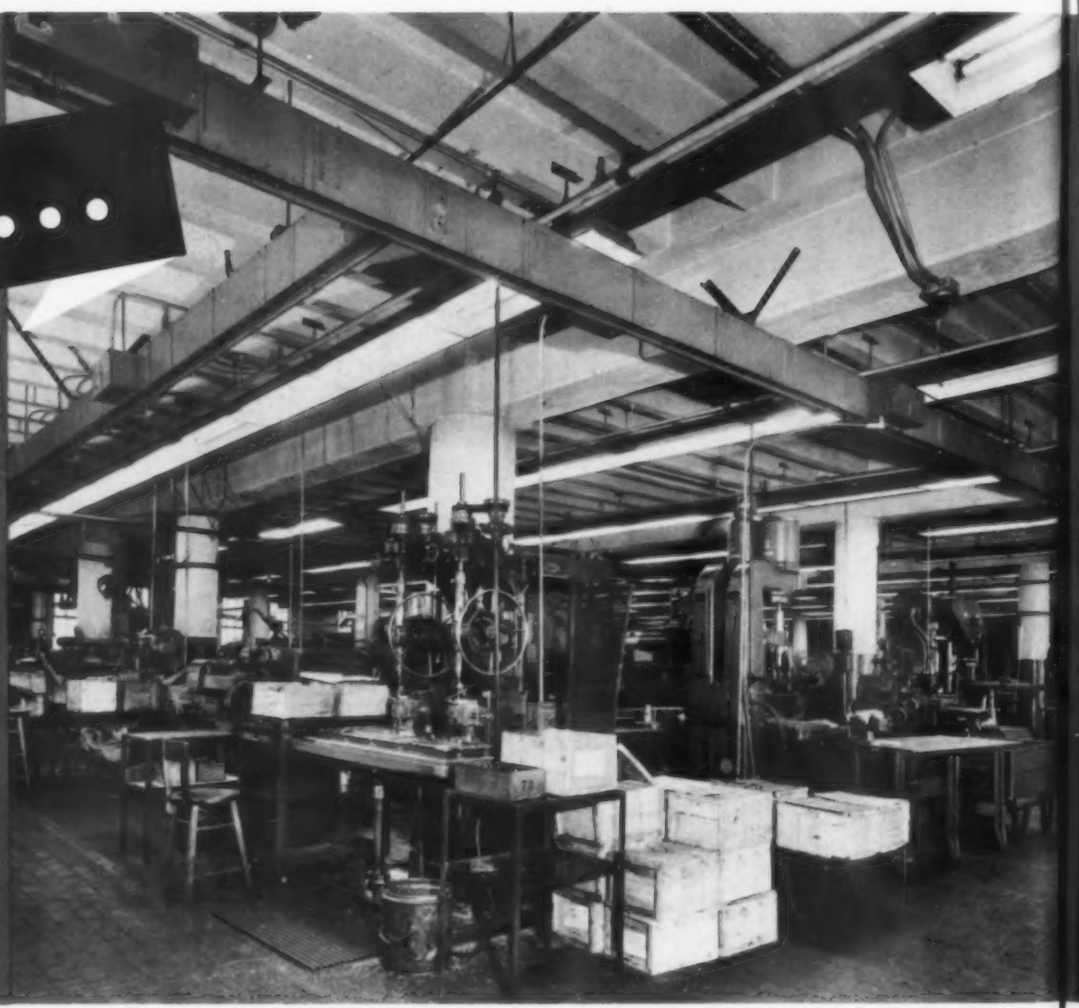
PRODUCTIVE POWER

Check these typical examples of the ways improved power distribution and utilization can boost plant efficiency. They are equally adaptable whether you are planning a new plant or modernizing existing facilities.

These are but a few of the time-saving, cost-cutting applications possible with the complete line of Westinghouse plant electrical equipment. Skilled Westinghouse engineers, with a practical knowledge of production techniques in *your* industry, are ready to help you on specific problems. For engineering help, just phone or write your nearest Westinghouse office.

FASTER . . .

Duct speeds production changeovers . . . in this large Chicago plant. Machinery can be relocated faster, since power is taken off wherever needed by plugging in right at the load. Flexible, convenient power distribution is provided without long secondary cable runs. Future production line shifts need not be delayed by expensive relocation of power distribution facilities.



WESTINGHOUSE

Power More Productive

CUT POWER COSTS...REDUCE MAINTENANCE

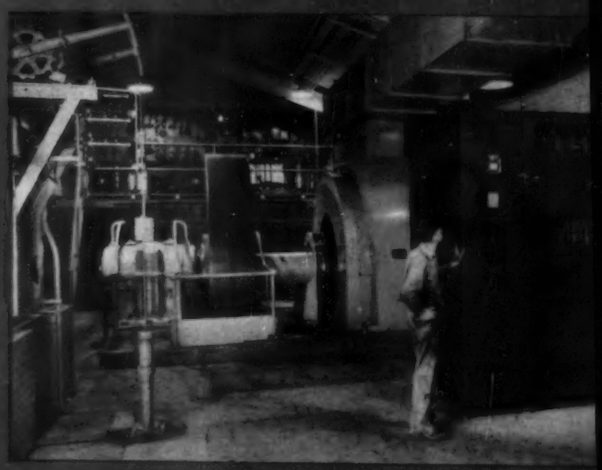
BETTER...

Control Centers improve operation, increase safety, cut service time . . . . . . In a large mixing room—where 85 motors drive synchronized conveyers, sand mixers and slingers—a Westinghouse Control Center replaced individual starters. Result: centralized, interlocked control of all operations; greater safety for personnel; important savings in service time on individual operations located 200 ft. or more apart.

Ignitron Rectifiers can operate automatically and unattended. With no major moving parts to require maintenance, the Ignitron delivers power continuously, 24 hours a day. Maintenance costs can be reduced as much as 66% by use of Ignitron Rectifiers in place of standard motor-generator sets.

CHEAPER...

AB-I Breakers eliminate outage costs. When an AB-I Breaker interrupts the circuit due to abnormal conditions, service can be restored immediately—there is nothing to replace. In a typical steel mill installation, savings in production, man and machine hours, and replacement costs amount to over $2,000.00 a year.



$1,500.00 Monthly Savings . . . effected in this Eastern steel plant by the use of two 1260 kva Capacitors—one unit shown here. Cost of the Capacitors was offset by power savings in eight months time.

Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

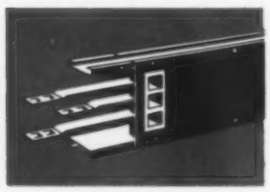
Here's the complete line of Westinghouse power distribution equipment →

FOR ANY POWER DISTRIBUTION PROBLEM Westinghouse OFFERS

THE RIGHT EQUIPMENT..APPLICATION HELP

CONVERTIBLE AB "DE-ION" DISTRIBUTION PANELBOARDS are available for circuits from 15 to 600 amperes, inclusive; 600 volts a-c, 250 volts d-c.

AB-I BREAKERS are built in ratings from 15 to 600 amperes at 125 to 250 volts, d-c; 115 to 600 volts a-c. Individually calibrated at factory. Sealed to prevent tampering.

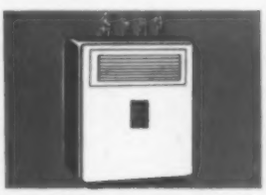


PLUG-IN BUS DUCT ranges in capacity from 225 to 1000 amperes, for 2, 3 and 4-conductor applications. Built in 10' lengths, with plug-in openings at 12" intervals.

POWER CENTERS are available for voltages up to 15,000, 3-phase, 60-cycle, with capacities of 100 to 2,000 kva, depending upon the voltage.

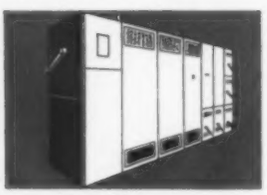
CONTROL CENTERS to handle combinations of: squirrel-cage motors from 1 to 100 hp, three-phase, 220 to 550 v.; unit starters from NEMA sizes 1 through 4.

CAPACITORS for indoor mounting are built with single or multiple dust-tight covers; small or large racks; 7½ kva, 230 volts to 2520 kva, 13.8 kv.



ASL AIR-COOLED TRANSFORMERS are built in single and three-phase designs, rated from 150 to 500 kva, 2400 to 15,000 volts.

SAFETY SWITCHES are built in a wide range of models for ratings of 120, 240 and 575 volts a-c; 125, 250 and 600 volts d-c; 30 to 1200 amperes.



AIR-COOLED NETWORK SYSTEM UNITS—capacities of 300, 500, 750 and 1000 kva for high voltages from 2300 to 13,800 and low voltages of 125/216 (4-wire).

APPLICATION ENGINEERING

The how-to-do-it ability of Westinghouse engineers is available at any time to help solve power problems in your plant. This application engineering service applies the broad electrical and production experience gained in many fields of industry to your specific problems. Just contact your nearby Westinghouse office, and a competent engineer will call.

RESEARCH

The scope of Westinghouse research reaches into every industry. Wherever power is used and distributed, this research has played an important role in doing jobs better, faster, cheaper. Westinghouse research facilities are available at any time to help you use new production tools and apply scientific knowledge in finding practical solutions to production problems.

TRAINING MATERIAL

Westinghouse training material includes not only instruction courses in such subjects as electronics and resistance welding, but everyday help in all phases of the operation and maintenance of modern electrical equipment. This help is available in the form of printed literature and training films. Ask your nearest Westinghouse office to show you samples of this material.

MAINTENANCE

A nationwide chain of 34 Westinghouse Manufacturing and Repair Plants offers speedy, effective help on all types of electrical service and repair. A skilled corps of specialists, on call through your nearby Westinghouse office, is ready to help you at any time.

RENEWAL PARTS

Parts warehouses in 29 cities carry complete stocks of genuine Westinghouse renewal parts. Westinghouse distributors—in addition to their own stocks—can secure parts promptly from warehouse or factory stocks.

Mail coupon for more information

Westinghouse Electric Corporation
P. O. Box 868, Pittsburgh 30, Pa.

Please send me more information on the following products:

____Panelboards	____Power Centers	____ASL Transformers
____AB-I Breakers	____Control Centers	____Safety Switches
____Bus Duct	____Capacitors	____Network Units
____Lighting		____Ignitron Rectifiers

Name_____ Company_____

Title_____

Address_____ City_____ State_____

J-90570

PRODUCTIVE POWER

Litho in U.

There is no substitute for availability or for quality. The Bunting Distributor in your community gives you Bunting Quality and Bunting availability—quality bearing bronze available from his stock. Write or ask for the new Bunting Catalog. The Bunting Brass & Bronze Company, Toledo 9, Ohio. Branches in Principal Cities

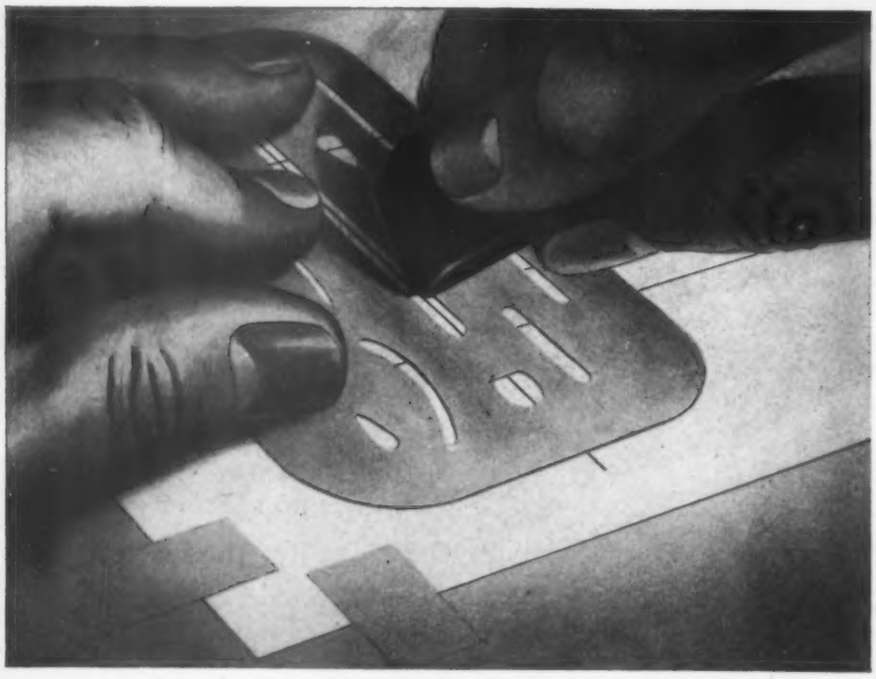
BUSHINGS

BRONZE BEARINGS

PRECISION BRONZE BARS

Bunting

67



Friend OR ENEMY?

An eraser is an important part of any draftsman's equipment. But an eraser can do plenty of damage to your drawings if lines feather when you re-ink over an erasure. That's why Arkwright Tracing Cloth is made to stand erasures and still take clear sharp lines in pencil or ink.

High, permanent transparency, greater strength, and freedom from dirt, specks, pin-holes and other imperfections have made Arkwright Tracing Cloth the choice of experienced draftsmen for over twenty years. That's a record you'd do well to look into, and learn for yourself the "reasons why". For free samples of Arkwright Tracing Cloth write – right now – to Arkwright Finishing Company, Providence, R. I.

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Sold by leading drawing material dealers everywhere

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Arkwright
TRACING CLOTHS
AMERICA'S STANDARD FOR OVER 20 YEARS

(*Continued from page* 184)

tools comprise a solid Kennametal round clamped on end in a heat-treated steel holder, and supported by a back-up adjusting screw. Each end of the round provides a circular cutting edge which may be revolved to provide new cutting edge. Ends may be reground. Advantages include lower tool inventory, reduced tool maintenance, and reduction of down-time for tool adjustment and replacement. *Kennametal, Inc., Latrobe, Pa.*

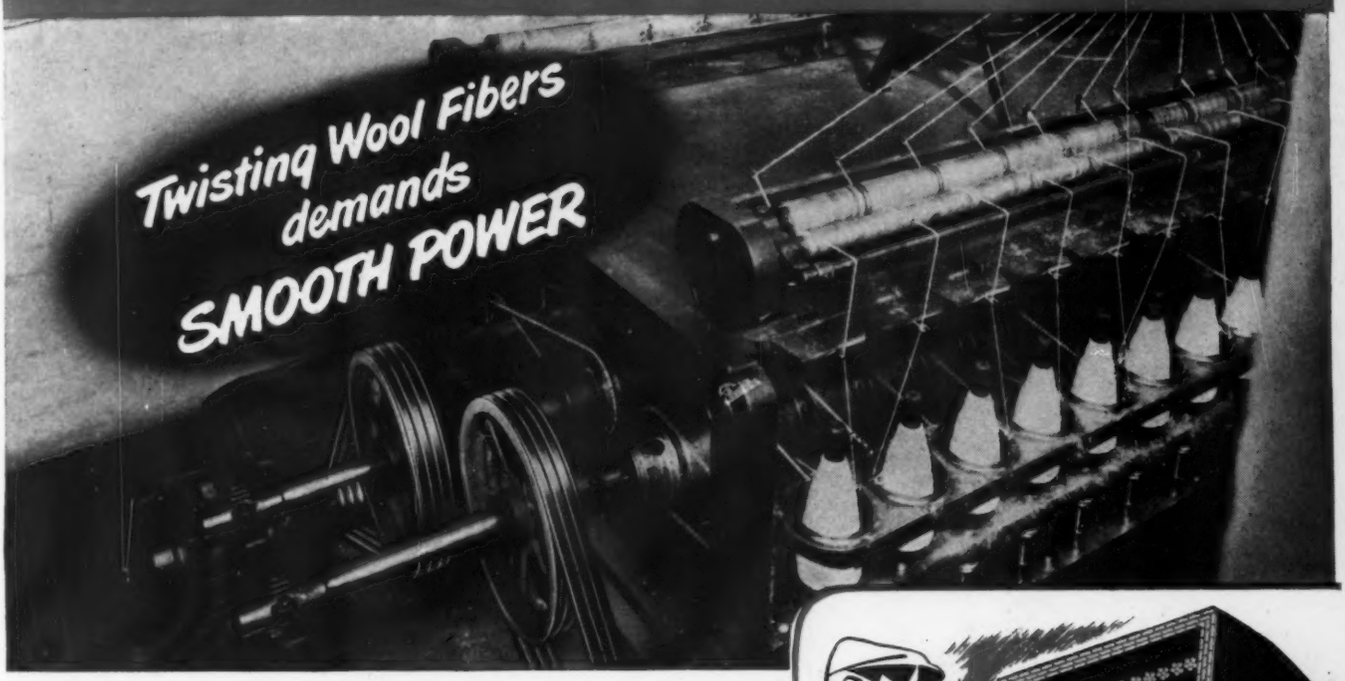
VOLTAGE HOLDING GENERATOR SET

QUICK-acting automatic regulation to maintain rated voltage, is featured in 180 and 360 cycle generator sets for powering high-frequency portable tools. The "Regulectric" voltage regulating circuit (illustrated) built into the generator provides positive, instantaneous restoration of voltage to normal whenever there is a change in load. The compact circuit has no moving parts and requires no maintenance of voltage since it operates on principle of electric resonance. Printed matter available. *Electric Machinery Mfg. Co., Minneapolis, Minn.*

VOLTAGE REGULATOR

STABILINE (Instantaneous Electronic) voltage regulator holds output voltage to within ± 0.1 volt of any nominal value in the settable output range between 110 to 120 volts for an input line voltage change from 135 to 95 volts. The time for recovery is usually in the order of 3 to 6 cycles. It is not affected by any load change and is independent of any load power factor change from a lagging .5 to a leading .9. Waveform distribution never exceeds 3% according to manufacturer. *The Superior Electric Co., 598 Laurel St., Bristol, Conn.*

WHY DAYTON V-BELTS *Start and Run Smoothly*

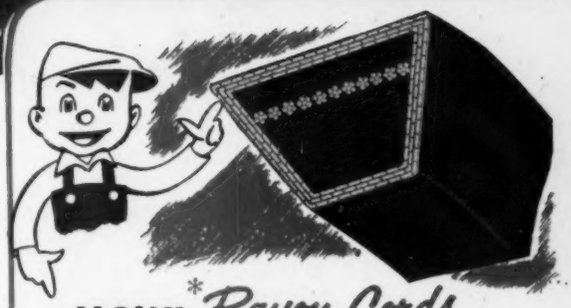


Machines that twist wool fibers and run the yarn onto spools are delicate. Power drives must start and run smoothly or machines quickly get out of order. In the plant of a manufacturer of papermakers' felts, rough starting and stopping, plus the slipping of the original power drive on a twister machine, caused it to be out of operation frequently for hours at a time. Loss of production was serious. Then, five years ago, a Dayton V-Belt Drive was installed. Since then the twister has not been out of service once due to power drive failures.

Dayton V-Belts start, run and stop smoothly because they wedge themselves in the pulley groove, thereby absorbing the shocks of suddenly applied power when motors are started or when peak loads suddenly come on. Smooth starting is one of many reasons why Dayton V-Belts can help you solve your power transmission drive problems efficiently and economically. Your Dayton Distributor will gladly help you. Call him today.

DAYTON RUBBER • DAYTON, OHIO

Branch Offices: Atlanta • Boston • Chicago • Cincinnati • Cleveland • Dallas
Detroit • Los Angeles • Minneapolis • New York • Philadelphia • St. Louis



NOW! *Rayon Cords

PROVIDE DAYTON V-BELTS WITH

1. **MINIMUM STRETCH**
2. **GREATER FLEX STRENGTH**
3. **LONGER V-BELT LIFE**

*Rayon cords are specially processed by Dayton for use in V-Belts to provide the most efficient and economical power transmission service for your needs. For the complete story, write for booklet A-469.

A leading mill supply house near you stocks Dayton V-Belts..
Look for the name in the yellow pages of your telephone directory

Dayton Rubber

THE MARK OF TECHNICAL EXCELLENCE IN NATURAL AND SYNTHETIC RUBBER

THE WORLD'S LARGEST MANUFACTURER OF V-BELTS

Add Comfort to Your Safety Program ...get WILLSON

Style F350

COMFORT IS IN THE SADDLE . . . With this broad saddle nose bridge, there's less fatigue in wearing these goggles over long periods of time in heavy duty operations. Super-Tough* lenses, of course.

Style No. 1

AN OUNCE AND A QUARTER OF PREVENTION . . . Lightweight, form fitting MONOGoggle can be worn all day with comfort. Tru-Hue green or clear plastic full vision interchangeable lens has high impact strength.

Style No. 45D

THIS LIGHTWEIGHT TAKES ON ALL DUSTS . . . Large throw-away filter and flexible molded face piece assure easy breathing and comfortable, snug, face fit. U. S. Bureau of Mines Approved.

*Reg. U. S. Pat. Off.

For complete information on these products and their application, as well as many more eye and respiratory protective devices, get in touch with your nearest Willson distributor or write us direct.

GOGGLES • RESPIRATORS • GAS MASKS • HELMETS

DOUBLE WILLSON PRODUCTS INCORPORATED

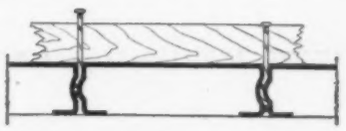
READING, PA., U. S. A. Established 1870

221 WASHINGTON STREET, READING, PA., U. S. A.

NAILABLE STEEL FLOORS FOR FREIGHT CARS, TRUCKS, TRAILERS

A new nailable steel flooring designed to slash maintenance costs for railway freight cars, trucks, and trailers and relieve the shortage of such hauling equipment is announced by the Great Lakes Steel Corporation, Detroit, Mich., a unit of National Steel Corporation.

The new floor consists of steel channels between which ordinary nails may be driven. Nails driven into grooves formed by parallel flanges of curved steel are deformed and held more securely than when driven into wood. Thus the equipment can handle freight customarily secured by blocks nailed in place to wooden floors. Because of the large volume of freight which must be blocked in place, a high percentage of freight car floors must be nailable, a feature heretofore obtainable only in wood.



Cross section of the nailable steel floor. Nailing grooves are filled with plastic to prevent loss of fine freight carried in bulk

The 8-inch wide channels are formed from N-A-X High Tensile, a low-alloy high-strength steel noted for resistance to abrasion and corrision. The channels are laid across the width of the car or truck and welded to the underframes, with a space left between the channels to provide the nailing groove. The grooves are filled with a self-sealing composition which prevents loss of bulk freight, such as sand and grain.

Hauling equipment having such floors thus can handle rough heavy freight, finished products, or bulk materials. This versatility is equivalent to adding new rolling stock because it eliminates many time-consuming switching and asembling operations to supply cars with floors suitable for the particular commodity involved. Open top cars are at present maintained in two types with either steel or wood floors, whereas all box cars have wood floors. The new steel flooring will make a car usable for all types of loading throughout its life as nailing will not damage the floor in any way.

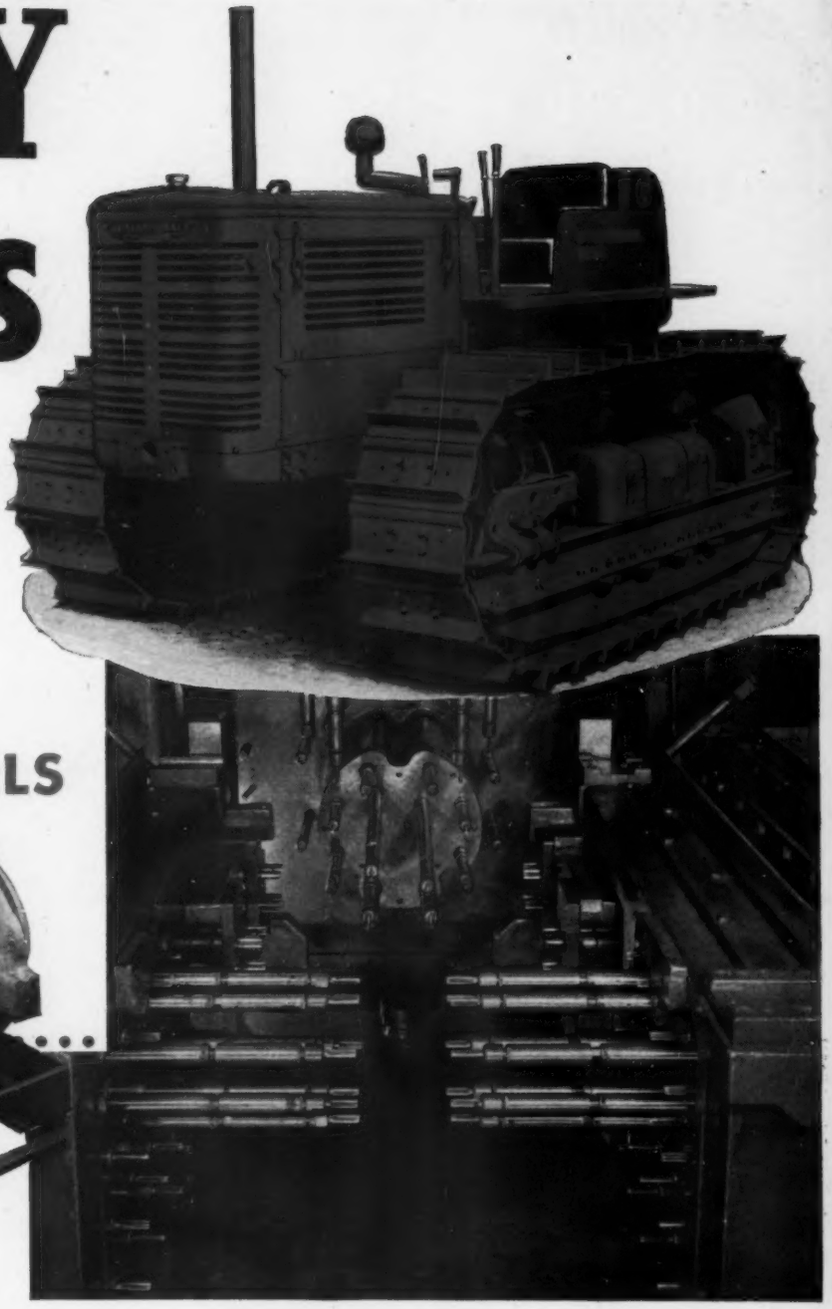
The product will be handled by a newly-created Steel Floor Division of the corporation under the direction of Harry D. Fenske, the firm's Director of Transportation.

COMMERCIAL STANDARD FOR SAFETY WEARING APPAREL MATERIALS

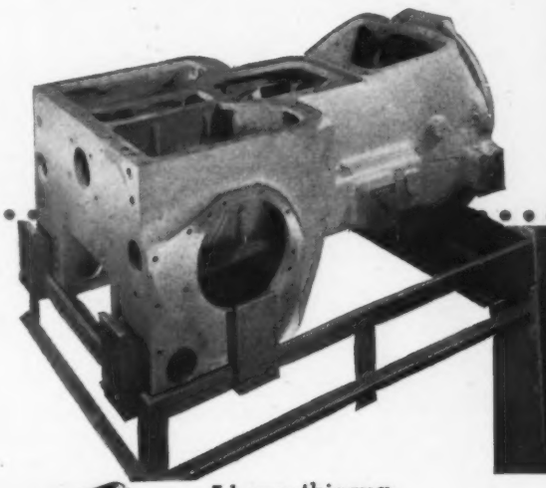
Commercial Standard CS-129-46, Materials for Safety Wearing Apparel, effective for new production from July 21, 1947, is announced by the Division of Trade Standards, National Bureau of Standards, Washington, D. C.

(*Please turn to page* 194)

BESLY TAPS



Share in the Production of INTERNATIONALS



Above: this rugged, one-piece frame casting is the "back-bone" of an International Tractor

For multiple tapping on tractor frames, this automatic machine, equipped with Besly high-speed taps, threads 89 holes in a single operation.

Profitable Facts For Tap Users

This handy booklet offers useful information on taps and tapping procedures It's written by shop men for shop men. Tap fits and drill sizes are listed in detail. Write today on your own letterhead for your copy—free.

The International Harvester Company relies on Besly Taps for many threading operations in building its world-famous diesel tractors.

For more than 50 years—Besly Taps have proved their outstanding capacity for clean-cut, low-cost work. A list of Besly Tap users is a directory of well-known American manufacturers.

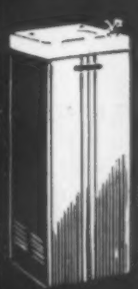
Let a Besly engineer help you select the right tap for every job. Write today for information!

CHARLES H. BESLY AND COMPANY
118-124 N. Clinton St., Chicago 6, Ill. Factory: Beloit, Wis.

BESLY BESLY TAPS • BESLY TITAN ABRASIVE WHEELS
BESLY GRINDERS AND ACCESSORIES

IF YOU WANT—
HAPPIER WORKERS

Consider
Cordley®



ELECTRIC WATER COOLERS

Cost per employe per day:
About the price of half
a stick of gum.

CORDLEY & HAYES
443 FOURTH AVE., NEW YORK 16

In Canada: Northern Electric Co., Ltd.....Crane, Ltd.

BRAKE RELINING METHOD ELIMINATES RIVETING

A new means of relining brakes for motor vehicles, known as the Uni-Bond Process, binds the lining to the brake shoes by the use of Uni-Bond cement, replacing the old method of riveting. The technique was developed by Goodyear Tire & Rubber Co., Akron, O.

The new method is said to make possible the exposing of a larger contact area of lining to the brake drum, resulting in better brake performance. The lining may be worn down to the shoe, rather than only to the rivet heads as formerly, insuring longer brake lining life. Elimination of the small indentations caused by counter-sinking rivet heads, prevents accumulation of small particles and abrasive material ultimately responsible for scoring drums. It is claimed that bonding efficiency of Uni-Bond is six to nine times greater than that of rivets.

TIRE INFLATION SAFETY CAGE

New safety device for operators of trucking fleets is the tire inflation safety cage developed by the Firestone Tire and Rubber Co., Akron, Ohio. By using

Cage protects tire repairman

this two-inch steel tubing cage, tire repairmen are protected from danger should the ring blow off after a tire has been newly mounted. The entire unit weighs 425 pounds and handles tires up to 1200-24 sizes.

METERS FOR MEASURING SPEED OF TRAVEL

Hand meters for measuring speed of travel in either feet or yards per minute are now available, according to Metron Instrument Co., Denver, Colo. The meters are said to be especially useful in the paper, steel and textile industries for checking the speed of the product through processing mills and presses. They provide an accuracy of 1% according to the manufacturer, and are available in ranges from 3 to 3,000 yards per minute or 10 to 10,000 feet per minute.

Contact to the moving member is made with a replaceable free running disc, one foot in circumference, clamped on the rotating shaft of the head.

(*Please turn to page* 196)

SIMONDS Red Tang FILES

...they keep your File-Costs down

RED TANG FILES have the same basic tooth-design as Simonds Metal-Cutting Saws. So Red Tangs *cut*, instead of *scrape* . . . remove more metal with less elbow-grease. That's why workers like them. *And here's why YOU will like them:* They last longer . . . and deliver more and better work per file-dollar. Order Simonds Red Tank Files from your Industrial Supply Distributor, or from the nearest Simonds office listed below.

BRANCH OFFICES: 1350 Columbia Road, Boston 27, Mass.; 127 S. Green St., Chicago 7, Ill.; 416 W. Eighth St., Los Angeles 14, Calif.; 228 First St., San Francisco 5, Calif.; 311 S. W. First Avenue, Portland 4, Ore.; 31 W. Trent Avenue, Spokane 8, Washington; *Canadian Factory:* 595 St. Remi St., Montreal 30, Que.

SIMONDS SAW AND STEEL CO.

FITCHBURG, MASS.

Other Divisions of SIMONDS SAW AND STEEL CO. making Quality Products for Industry

SIMONDS SAW AND STEEL CO. LOCKPORT, N. Y. — *Special Electric Furnace Steels*

SIMONDS ABRASIVE CO. PHILADELPHIA, PA. — *Grinding Wheels and Grains*

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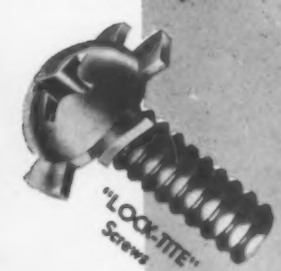
HOLTITE

Industry's Dependable Source For Every Type Of Fastening



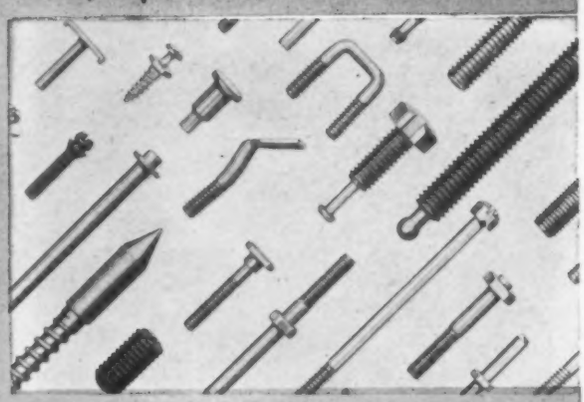
However complex or simple your fastening requirements may be, they can be met by the comprehensive range of standard or special HOLTITE items produced by the Continental Screw Company.

For over 43 years this progressive plant has kept step with the advance of American industry—meeting its current needs as well as anticipating its future requirements. In the extensive HOLTITE plant skilled engineering talent supplements completely modern equipment, Chemical and Metallurgical Research Laboratories, and every modern scientific inspection and testing device. In short, we are equipped with the most capable men, methods and machinery to provide a dependable source for every type of modern fastening. Specify HOLTITE for efficient, economical application in every assembly.

SPECIALS

Frequently, a special fastening or part designed for a particular purpose will replace several standard fastenings or parts and effect definite savings in labor and material costs.

We have complete facilities for producing specials exact to your specifications, blue prints or samples.



CONTINENTAL SCREW CO. New Bedford, Mass., U.S.A.

FHP MOTOR EDUCATIONAL KITS AVAILABLE FROM G.E.

To meet the need for practical construction experience in electrical courses in schools and colleges, the General Electric Co. has made available a number of fractional-horsepower motor educational kits. They contain standard punchings, parts, and part assemblies, with a complete set of instructions for machining and assembling. Also included are a set of double-sealed ball bearings and a special name plate for easy indentification.

Additional information can be supplied by the Educational Section, Special Products Division, General Electric Co., Schenectady, N. Y., or the Fractional Horsepower Motor Division, General Electric Co., Fort Wayne, Ind.

LIFTS EASE PROBLEMS OF MOVING BULKY UNITS

Moving heavy and awkward crated or uncrated units is said to be simplified by use of the Montour "Rol-A-Lift", made by Skarnes Engineering & Safety Co., Minneapolis, Minn., according to the manufacturer. The lift consists of two units which are placed into position at each end of a crate respectively. Stub forks are inserted and the crate is jacked up and can be maneuvered readily on the lifts full swiveling casters. Turning the jack handle lowers the load at controlled speed. The lift is available in 4,000 and 6,000 pound capacities.

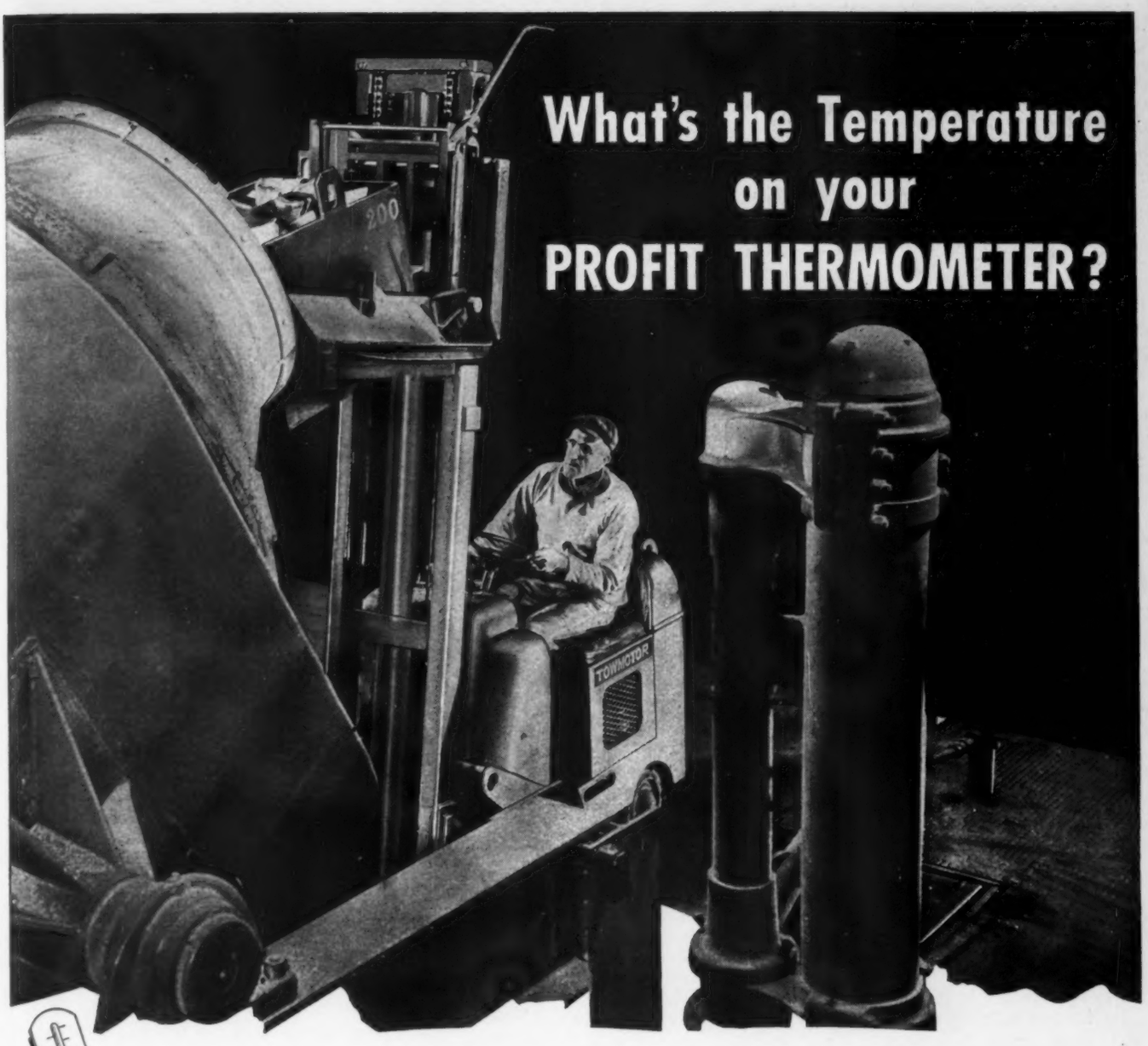
Available in 4000 lb. and 6000 lb. capacities

NEW PLASTIC FINISH PROTECTS SURFACES

A clear, water-thin plastic finish for coating walls, floors and other surfaces, is being offered for civilian use for the first time by Reyam Plastic Products Co., Chicago, Ill. The coating is simply applied by wiping on with a cloth and is resistant to alcohol, alkalis and most chemicals, according to the manufacturer.

The coating is not a paint or varnish, dries in 10 minutes, and will not crack, craze or flake off, the maker says. It can be used on motors, machinery, furniture and similar items.

(*Please turn to page* 198)



What's the Temperature on your PROFIT THERMOMETER?

If your profits are hovering near the zero mark, put the heat on handling. Inefficient handling will freeze up the flow of materials through production, reducing productive output. Towmotor Fork Lift Trucks and Accessories will thaw out production bottlenecks, keep materials flowing in a steady, controlled stream that keeps men and machines producing at capacity. If you're looking for "warm weather" readings on your profit thermometer, send for a Pocket Catalog. Towmotor Corporation, Division 11, 1226 East 152nd Street, Cleveland 10, Ohio.

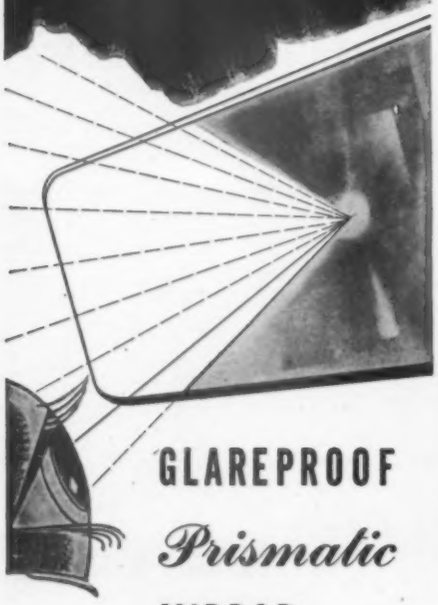
SEND FOR SPECIAL BULLETINS DESCRIBING THE **TOWMOTOR** REVOLVING CARRIAGE • SIDE SHIFTER UNLOADER • UPENDER • SCOOP • CRANE ARM • EXTENSION FORKS • EXTENSION BACKREST • RAM • OVERHEAD GUARD

TOWMOTOR FORK LIFT TRUCKS *and* TRACTORS

THE ONE-MAN GANG

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

Another Use for Donnelly-Kelley Precision Glass Parts



GLAREPROOF *Prismatic* MIRROR

● This prismatic rear-view mirror deflects 90% glare. Made for the Guide Lamp Division of General Motors Corporation, this piece is an example of the finest quality mirror-surfacing and fabricating that is making Donnelly-Kelley famous for precision glass parts—in the industrial world of today. May we help you, too, with your flat glass problems. We invite you to send us your inquiry.

DONNELLY-KELLEY *Glass Products*

Donnelly-Kelley Glass Co.
Holland, Mich.

ALL-PLASTIC BOAT WEIGHS 80 POUNDS

A one-piece all-plastics boat believed to be the first of its kind ever molded completely of synthetic materials was exhibited by the General Electric Company at the Second Annual Plastics Exposition in Chicago. The boat has been produced by the G-E Plastics Division for the Beetle Boat Company of New Bedford, Mass.

Molded of a glass matt material and a plastic resin, the nine-foot dinghy weighs only 80 pounds and can be handled easily by one person, it was said. The boat can be molded in about two hours time.

The craft's light weight will permit greater speed than is obtainable in similar craft and because of its one-piece

The boat is molded of glass matt material and a plastics resin

construction which eliminates seams, the boat is leak-proof, Beetle Company said.

"The advantages of plastics in boat building are many," Beetle Company officials said. "The boat is light weight and durable. It won't swell or dent. It requires no care as it is not affected by the elements, salt water or worms. It is safe, extremely convenient to use, economical and attractive."

The new boat, known as the Beetle PG-9, has both tensile and impact strength greater than any similar boat of other materials, weight for weight, it was stated. Its molded plastics seats and gunwale incorporate a plastics foam which gives a permanent buoyancy to the boat and permits accommodation for five persons easily.

The unusual strength is gained in the boat's construction by building up layers of glass fibres and a synthetic resin which are cured by steam heat and pressure, G-E engineers said. Three rope holes and four oar lock sockets are molded in the boat with metal inserts.

Beetle Company stated that the PG-9 has exceptional maneuverability and may be used wherever any small craft is desired. Outboard motors may be attached.

1 1 1

COMMERCIAL STANDARD FOR MINERAL WOOL ISSUED

The U. S. Department of Commerce has issued the Recommended Commercial Standard for Mineral Wool: Batts, Loose-Fill and Granular-Fill, for Building Insulation, TS-4396. It is now being circulated to the trade for written acceptance.

HAND TAPPING *with* MACHINE PRECISION

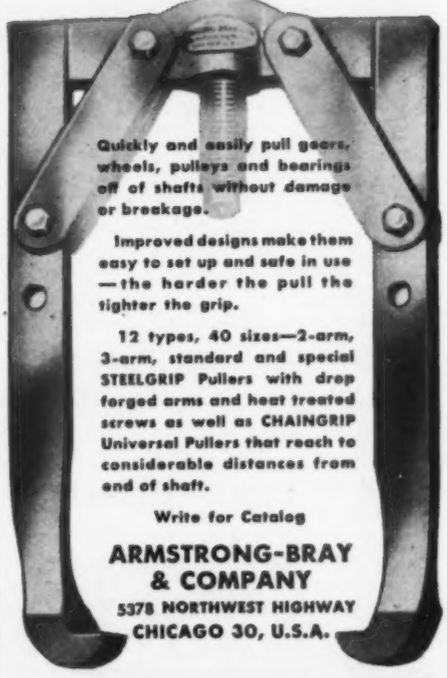
$52.50 F. O. B. MINNEAPOLIS

Anyone can operate a Dahlstrom Tap Guide. Just fasten it to a post, slip a Tap Adaptor into the spindle and turn the handle. Cuts tap breakage down to zero — and saves those countless hours that are spent trying to pry broken taps out of dies. Comes equipped with 7 Adaptors, ranging from 8-32 to ½", which takes care of 95% of all tapping requirements. (Taps are not furnished.) 12" x 6" x 14" high. At mill supply houses, or Dahlstrom Mfg. Co., 438 South Sixth Street, Minneapolis 15, Minn.

Ask for Circular.

Dahlstrom TAP GUIDE

ARMSTRONG-BRAY GEAR and WHEEL PULLERS



Quickly and easily pull gears, wheels, pulleys and bearings off of shafts without damage or breakage.

Improved designs make them easy to set up and safe in use —the harder the pull the tighter the grip.

12 types, 40 sizes—2-arm, 3-arm, standard and special STEELGRIP Pullers with drop forged arms and heat treated screws as well as CHAINGRIP Universal Pullers that reach to considerable distances from end of shaft.

Write for Catalog

ARMSTRONG-BRAY & COMPANY
5378 NORTHWEST HIGHWAY
CHICAGO 30, U.S.A.

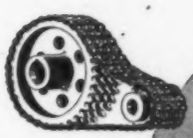
do you know Roller Chain...

ELIMINATES MORE THAN SLIPPAGE!

① **POSITIVE BALDWIN-REX ROLLER CHAIN DRIVES** not only stop power-wasting slippage, they also eliminate damage to your machines by their inherent elasticity that absorbs shocks and overloads. And, their exceptionally long service life eliminates frequent "time-outs" for repairs and adjustments.

② **I'M NOT JUST TALKING** on that long-life angle. In our product development laboratories, we actually prove the wear-resistant qualities of Baldwin-Rex. This machine, for example, runs the chain over small sprockets at excessively high speeds under conditions considerably more severe than actually encountered to determine life expectancy. In this manner, we get data on materials, heat-treatment, parts design, etc., that mean added service for you.

③ **THIS PLANT** found the exceptionally long life built into every link of Baldwin-Rex Roller Chain a big help in keeping the wheels turning without interruption. Despite repeated shock loading, the drive required very little servicing and no down-time for repairs. You'll find Baldwin-Rex can do the same for you!



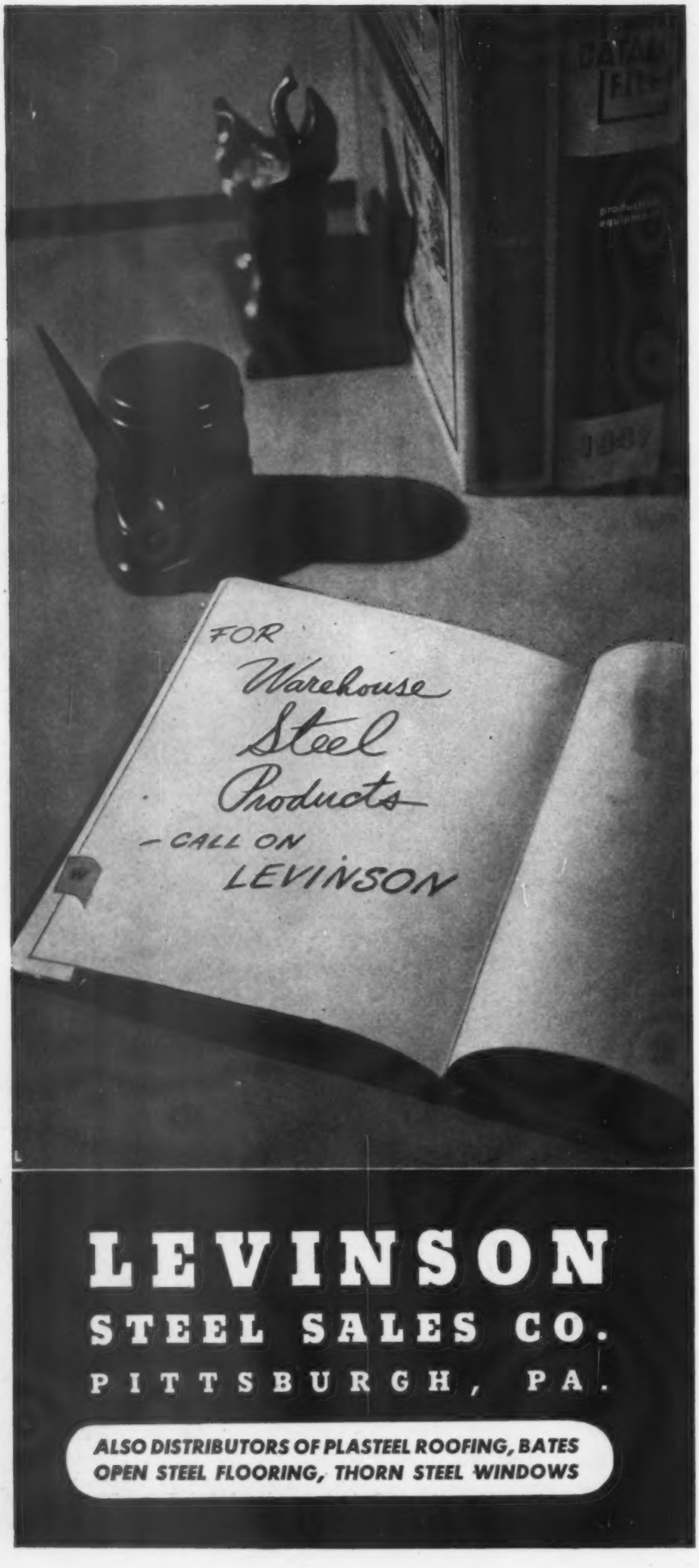
You can simplify replacement and chain selection, cut costs, and improve deliveries by buying standard roller chains. Your Baldwin-Rex man will be glad to give you the facts on standard chains and help you with your application problems.

BALDWIN·REX

ROLLER CHAINS

BALDWIN-DUCKWORTH DIVISION OF CHAIN BELT COMPANY

366 Plainfield Street, Springfield 2, Mass.



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FIBERGLAS-PLASTIC GASKET

A fiberglas-plastic ring seal gasket, designed to help solve oil and gas well corrosion problems, is announced by Plastic Engineering & Sales Corp., Ft. Worth, Texas. The gasket, available in all standard sizes, is a high-strength, high-dielectric laminate consisting of plies of fiberglas cloth impregnated with a phenolic

Cut-away section of flange, showing how the fiberglas-plastic ring seal gasket is installed. One of the gaskets is shown at the right

resin, and precision molded under high pressure and temperature. The high dielectric strength of the gasket makes it possible, by using it in ring sealed joints, to provide insulation against stray and long line electrical currents. The gasket also eliminates corrosion at the joint. The gasket has flat compression strengh of 66,245 psi, an edge compression strength of 15,757 psi, and a tensile strength of 48,272 psi. Temperature limit is 480° F. It is said to be unaffected chemically by any of the gases and fluids encountered in the production and transmission of oil and natural gas.

SMOKELESS HEATER TESTS IN FOUR MAJOR CITIES

Practical field tests for commercial models of the BCR Smokeless Heater, developed by Bituminous Coal Research, Inc. and 18 stove manufacturers, are now being conducted in Chicago, Cincinnati, Indianapolis and Pittsburgh. According to reports by BCR engineers the heaters are giving smokeless performance with high-volatile coals, and simple and trouble-free operation.

PUNCTURE-SEALING INNER TUBE AGAIN IN PRODUCTION

United States Rubber Co. has announced the return to production of its puncture-sealing inner tube, which contains plastic rubber inside the crown to surround puncturing object.

The tube, developed before the war, is designed for use where the danger and possibility of punctures are great and where elimination of roadside delays is essential.

By sealing the aperture caused by the puncture, the plastic rubber prevents loss of air both before and after the object is removed. Repairs are usually unnecessary because the plastic material flows back into place as soon as the object is taken out. The sealing material is held in place by a honeycomb construction to insure it against "bunching up".

PACKAGING FOODS OF DIFFERENT FLAVOR IN SAME CAN

New uses for Pliofilm in packaging foods of different flavors in the same can, and shipping highly perishable sea food great distances without refrigeration were demonstrated at the annual packaging show of the American Management Association.

Visitors at the show saw a can of barbecued wieners in brine, with the sauce

Packaging separate foods

kept separate in the same can by the Pliofilm bag. The sack prevents any interchange of flavor between the two items in the can. The method was devised by Oscar Mayer & Co., Madison, Wisc. Goodyear Tire & Rubber Co., producers of Pliofilm, cooperated with Ralph Duncan, seafood processor and shipper, in displaying shrimp in top-quality condition after being in transit for almost 40 hours without any type of refrigeration. Pliofilm was used as a liner to prevent seepage in standard Hinde & Dach Insulpaks, insulated at top and bottom between the sides by lightweight corrugated board.

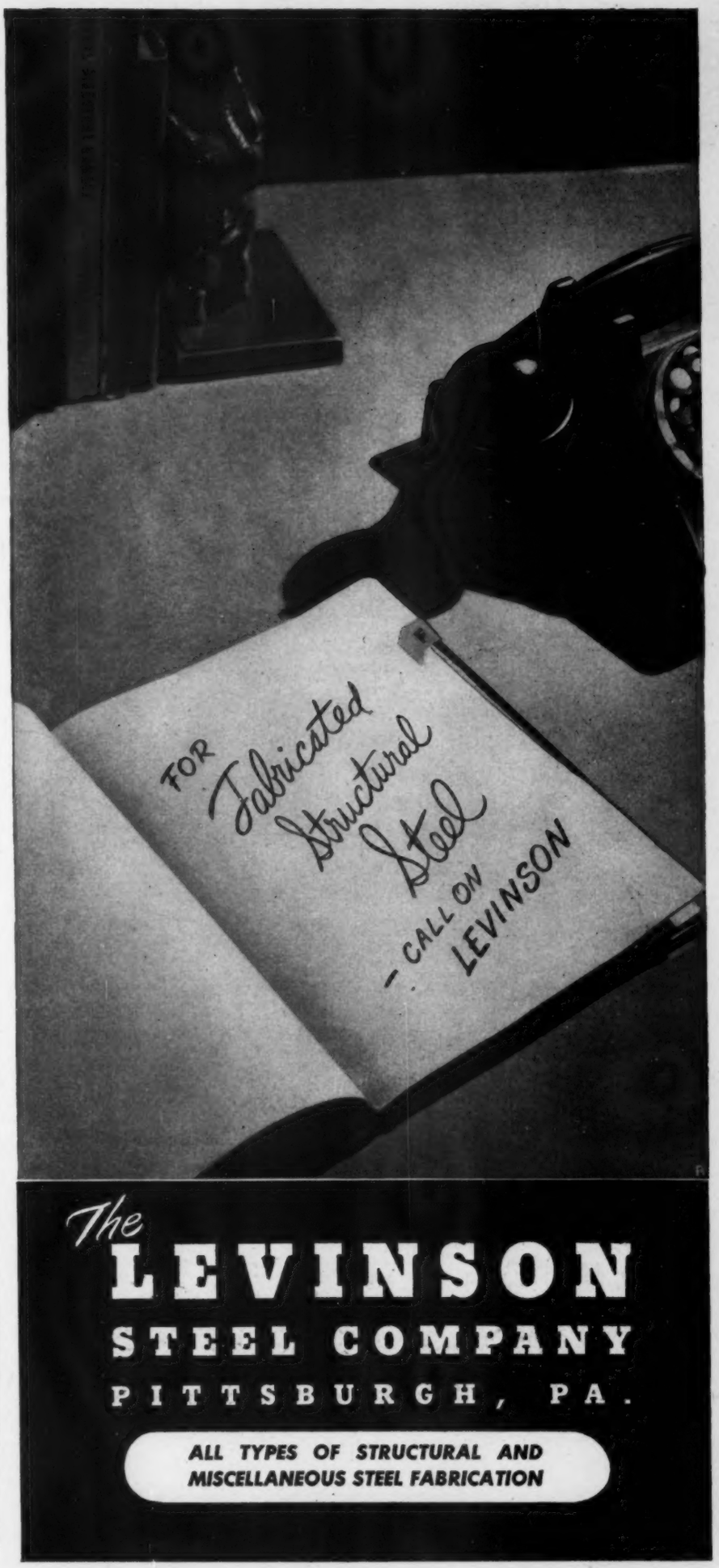
* * *

CARBON MONIXIDE INDICATOR

N. B. S. Carbon Monoxide Indicator for the rapid determination of infinitesimal amounts of carbon monoxide in the air, is being marketed by the United States Safety Service Co., 1215 McGee St., Kansas City, Mo., which states it has been licensed by the government to manufacture the gels and instruments.

The device is said to be the most sensitive instrument of its kind known to science. The detector is about the size of a pencil and was used during the war to detect poisonous fumes in plane cockpits, tanks, and so on. It will detect and closely estimate less than 1 part of carbon monoxide per 500 million parts of air, which allows a big safety factor.

The detector consists of a small glass tube sealed at both ends and a rubber bulb all packed into a small kit that fits into the pocket. When the presence of carbon monoxide is suspected, the tip is broken off the small tube and one end inserted in the bulb to draw air samples through the chemicals in the tube. If carbon monoxide is present the yellow chemicals will turn green in thirty seconds. The darker the shade of green, the higher the concentration. A matching color chart indicates the degree of concentration.



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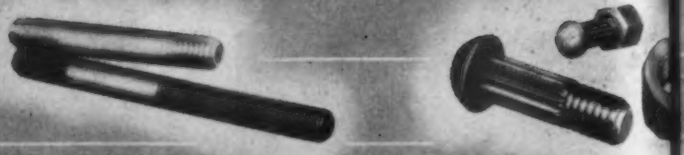

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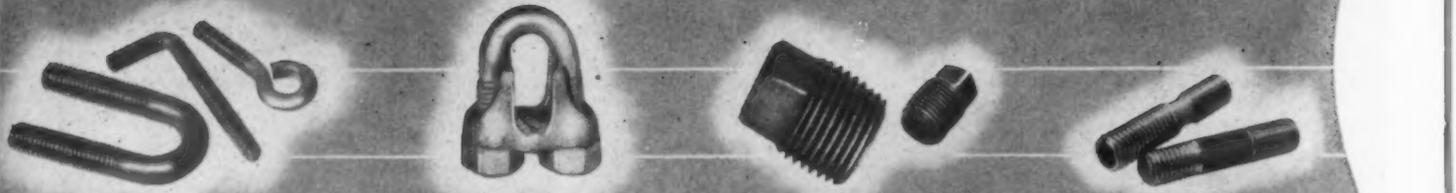

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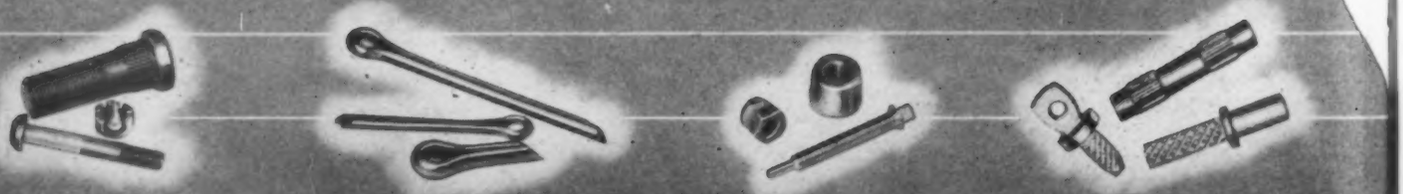

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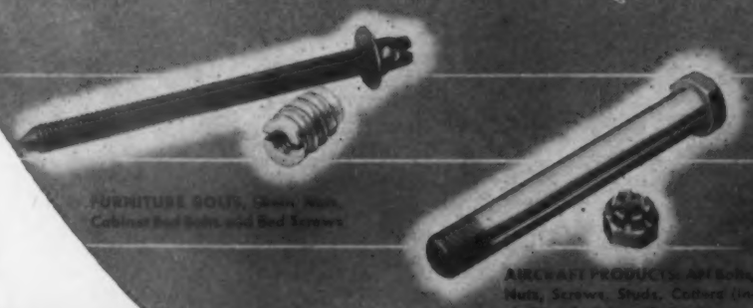

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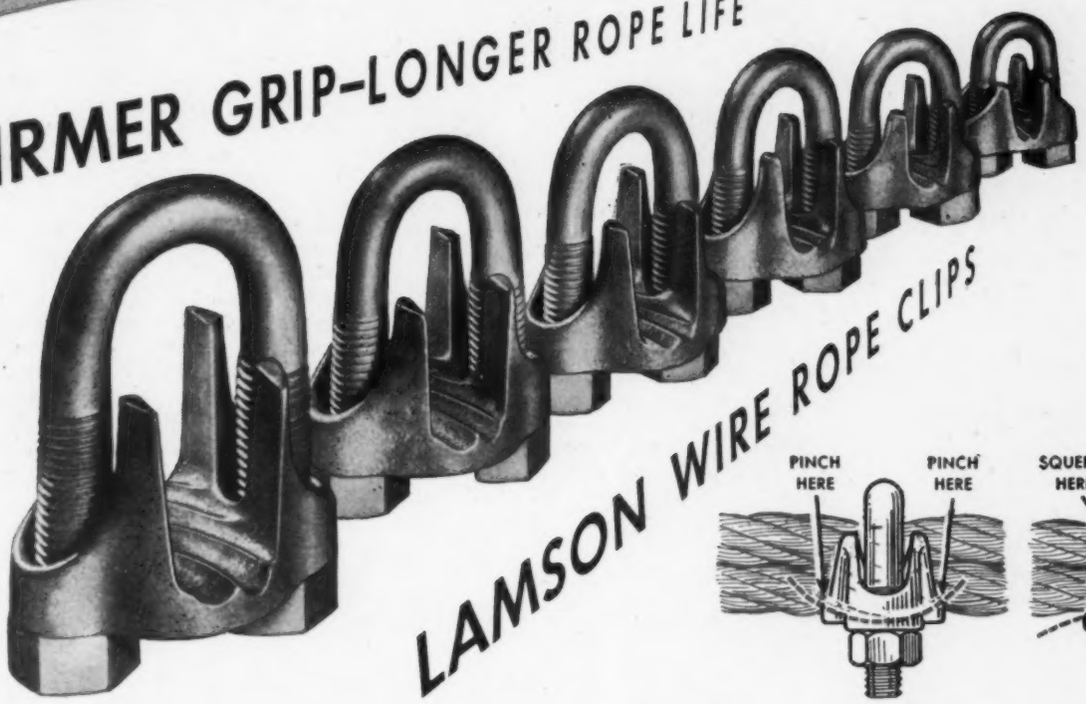
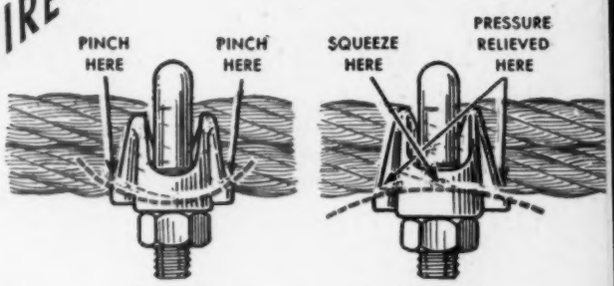


LAMSON WIRE ROPE CLIPS



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LAMSON "Bull Dog" Wire Rope Clips perform like champions when "the squeeze is on". The secret of their efficiency lies in the exclusive "Raised Saddle" design which distributes the holding pressure along the center portion of the rope "seat". The edges of the saddle are rounded downward —thus eliminating the rope-wearing "pinch" and chafing of conventional clips.

The drawing above graphically illustrates the superiority of the Lamson "Raised Saddle" design. Note these outstanding and exclusive features:

1. Saddle curves downward at edges thus relieving pressure and "pinch" on wire rope . . . particularly when rope enters clip at an angle.
2. Clip is thicker, and therefore stronger, at central, raised portion of the rope seat. This allows for greater tightening of the clip and a consequent stronger no-slip grip.
3. "U" bolt nuts will not tend to loosen up with use as with ordinary clips . . . even when the strain on the rope is released or reversed.

For the sake of safety, economy and efficiency, you'll be way ahead to specify Lamson "Bull Dog" Wire Rope Clips.

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Revisions Announced for Nema Motor Standards

A second revision, consisting of revised printed pages, has recently been issued for the NEMA Motor and Generator Standards, Publication No. 45-102. Standards of particular interest cover the new "D" flange, the resistance method of temperature determination, integral-horsepower hermetic motors, and small-power motors for special applications.

The dimensions of the new NEMA "D" flange for integral-horsepower motors built in frames 203 to 505 are given. Five "D" flanges accommodate the spread of the sixteen different NEMA standardized motor frame sizes. This new flange has the following four principal features:

1. A male rabbet.
2. Face of flange is in line with the shaft shoulder.
3. Diameter of flange is not greater than diameter of motor (except on frames 203 and 204).
4. Motor mounts on the machine from the motor side. Mounting holes go through the flange from the motor side.

The resistance method of temperature determination for large- and small-power a-c motors, single phase and polyphase, is now recognized as an optional method of temperature determination, and the applicable standards in the publication have been revised accordingly.

A new standard has been added covering the dimensions of integral hermetic motors for hermetic refrigeration compressors. Additional standards are now in the process of being developed for these motors.

Special Application Standard

Small-power-motor special application standards included are: (1) motors for belted fans and blowers, (2) stoker motors, (3) cellar drainer and sump pump motors, (4) gasoline-dispensing pump motors, (5) oil-burner motors and (6) washing-machine motors. These are in addition to those contained in the first revision, which covered (7) hermetic motors, (8) belt-driven refrigeration compressor motors, (9) jet-pump motors and (10) motors for shaft-mounted fans and blowers.

Purchasers of the NEMA Motor and Generator Standards, Publication No. 45-102, (price $4.00), which includes all NEMA standards which have been issued for motors and generators, will receive all revisions issued to this edition of the standard without charge until further notice. A separate publication excerpting the small-power motor standards included in Publication No. 45-102 is in the process of being printed, and orders are now being accepted.

Electrical Manufacturers Public Information Center, 155 East 44th St., New York, N. Y.

Standards Being Developed for Analytical Filter Papers By National Bureau of Standards

Standards of quality for analytical filter papers, previously non-existent for this important item in chemical research and analysis, are being developed by the Paper Laboratory of the National Bureau of Standards through a critical evaluation of all currently available brands. Based on improved testing methods perfected at the Bureau, together with established procedure for certain basic determinations, it is believed the standards finally recommended will provide a ready means of determining the suitability of a particular paper for its intended use. Requirements will be included for the three classes of general analytical work involving coarse, medium, and fine precipitates.

Analytical filter papers, like many other laboratory materials, have an importance to science and industry far in excess of their dollar value. Many industrial processes require quick, accurate analysis for their control and these depend, in many cases, on the speed, retentiveness, and purity of the filter paper used in making the analyses.

Filter papers have been used and bought by brand names, practically as a tradition among laboratory workers, and preference has usually been given to imported papers, most of which have come from England, Germany, and Sweden. When the war made supplies from these sources uncertain, American manufacturers began production of grades of analytical papers that had not previously been made in this country. In order to provide data that would be useful as a guide to manufacturers and users in comparing the quality of different papers, as well as to eliminate dependence on brand names, the Bureau undertook an investigation of the physical and chemical properties of the papers.

Improved methods were developed for determination of rate of flow of water through the papers, retention of fine precipitates, and ash contents, as well as a method for measuring the bursting strength of wet paper. Density, purity of cellulose, and acidity, for which definite testing procedures were already available, are also important determinations.

The method for rate of flow of water is of special interest. Unique in that it does not require the use of special, complicated apparatus, it possesses the advantage of simulating the manner in which filtrations are made. The filter

(*Please turn to page* 206)

See for yourself how Truarc slashes assembly time, cuts costs

2 MINUTES vs. 2 SECONDS!

Right before your eyes is visual proof of how much assembly time can be cut. Each of the many light streaks in the first photo traces another time-taking arm motion, increasing fatigue and reducing efficiency. In the second photo, one Waldes Truarc Retaining Ring replaces six screws and a collar. The assembler uses one tool—a pair of Truarc pliers. The single light streak means one arm-motion. Less time is required for job-training, because Truarc guarantees accurate relationship of parts regardless of the skill of the assembler. Truarc means lighter weight, less bulk. Production and maintenance men find Truarc Rings cut labor and material costs wherever they're used. Their unique taper design assures constant circularity. Their never-failing grip does a better job of holding machine parts together.

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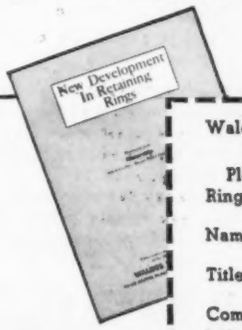

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(*Continued from page* 204)

paper is folded in a cone in the usual way, taking care to expel air pockets. Instead of placing in a funnel, however, the cone is suspended freely in a wire loop, thus eliminating the variables such as design, angle, and stem dimensions of the funnel. It was found necessary to prefilter the water used in the test, but when this was done, highly reproducible results were obtained.

The investigation was also extended to include a study of "shelf life" of filter papers. It was found that some papers not only became brittle with age, but that decomposition products were formed that might contaminate the solutions being filtered. An accelerated aging test previously developed for paper generally enabled a satisfactory prediction of stability to be made.

This work has shown significant differences among filter papers which, if studied critically, may point the way to future improvements. For example, some papers of equal retentiveness differ in speed, and hence may yield a clue as to how still faster papers may be made.

Measurements of the quality of three foreign and two domestic brands of analytical filter paper have shown that the American-made papers are fully equal to the imported papers. It is anticipated that the application of quality standards based on quantitative measurements will eliminate traditional buying practices and permit free competition among all suppliers.

CLAMPING DEVICE SIMPLIFIES CRATE AND BARREL HANDLING

A clamping device known as "Clamp-Lift" that enables a fork truck to pick up and carry as many as 18 crates without using a pallet has been introduced by Clark Tructractor, division of Clark Equipment Co., Battle Creek, Mich. Originally designed for use by packers and shippers of fruits and vegetables, the "Clamp-Lift" is said to be suited to handling any boxes or crates strong enough to withstand approximately 300 lbs. pressure.

For use on Clark Tructractor's Clipper and Trucloader fork trucks, both gas and battery powered, the device handles crates stacked 7 to 9 high, two rows deep. The lifting height is limited to 84". The Elec-Trucloader can be equipped to handle 9 to 11 boxes high, but lift is restricted to 6".

Benefits in addition to speedier movement include elimination of pallet investment and cost of pallet shipping and maintenance; and maximum use of air and floor space.

Squeezer arms of the "Clamp-Lift" are hydraulically actuated. Sharp metal pins on the inside squeezer surface grip the bottom row of crates to prevent slipping. The load is steadied by an adjustable rack which rests on top of the stack. Boxes are stacked with 2" spaces between stacks, to permit entry of squeezer arms. Box width should not be more than 28" nor less than 22".

(*Please turn to page* 208)

From report of James O. Peck Co. independent investigators... part of the continuing study of assembly savings made with Phillips Screws in leading plants.

Two girls drive 8000 screws a day each on a contact block assembly (above left). One, using Phillips Screws, can assemble parts and drive the screws. The other, using slotted screws, can perform only the driving operation.

● "On our conveyor line assembly operation, the Phillips Recessed Head Screw is definitely a big time saver. We drive 30,000 screws a day, assembling 2000 water system pump switches," said the Methods Engineer.

"Use Of Phillips Screws Saves At Least 16 Man-Hours a Day. When you're driving 30,000 screws, even a small time saving per screw mounts up. A very conservative estimate of the time we save is 16 man-hours per day.

"Phillips Screws Gain Time For Extra Operations. A girl, driving as many Phillips Screws as another operator on slotted screws, can assemble parts also.

"Easier For The Bit To Find The Phillips Recess, whether we're using air drivers, hopper-feed power drivers, or ratchet drivers. On slotted screws, even with a screw finder, the driver spins several times before it finds the slot, and in many spots there isn't room to use a finder. Phillips Screws make driving anywhere faster, easier.

Write For Full Report of this and other assembly studies, covering metal, plastics and wood products. Do it NOW ... the coupon makes it easy.

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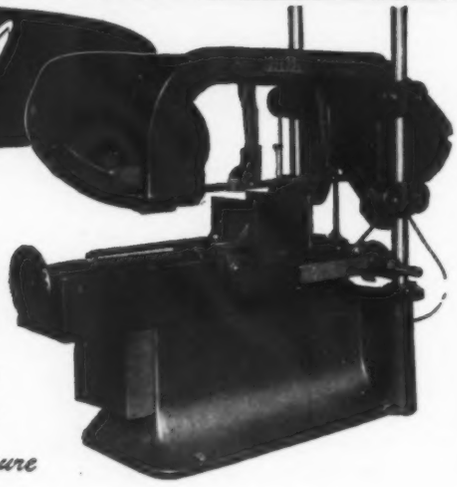

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Band Saw with...
Automatic Cutting Cycle
AND Controlled Blade Pressure

Here it is—the new Wells No. 12 Metal Cutting Band Saw with controlled, automatic cutting that reduces operator fatigue, makes better cuts and lengthens blade life. With the new Wells No. 12, just place the stock—bars, rounds, sections or pipe—in the quick-acting vise and push the starting buttons—the machine does the rest. The head comes down automatically, feeding the blade into the stock at a controlled pressure. At the completion of the cut, the head is raised hydraulically to a predetermined position and the motors shut off.

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ELECTRONIC AUTOMATIC GAGING AFFORDS FASTER SORTING

An electronic automatic sorting gage that inspects 3,600 fountain pen barrels per hour for accuracy of diameter and length has been built for the Esterbrook Pen Co. by the Federal Products Corp., Providence, R. I.

In the operation, known as "Sortron-Magic" gaging, the barrels are sorted into six acceptable size categories. Over and undersize pieces are automatically rejected. Acceptable size categories vary by only .0015". The parts are also counted. The company makes similar gages for inspecting piston pins, wafer parts (thickness), bearing balls, plain and tapered rolls, lengths, diameters and combinations of dimensions.

Added accuracy, simultaneous control of two dimensions, greater speed of work handling and lower labor costs, are claimed for this method of gaging.

ENGINEERS STUDY STEAM POWERPLANTS FOR TRUCKS

Old engineering ideas refashioned anew, and new engineering ideas realistically applied, came before the recent SAE Summer meeting. Members of the Society of Automotive Engineers were invited to reconsider the possibilities of adapting steam, or vapor, engines to commercial motor vehicles.

The idea of the steam car, breached periodically before SAE meetings since the steam-propelled vehicle ceased manufacture some 20 years ago, was presented in a new light by Edmund B. Neil, consulting engineer, of Columbus, Ohio. Mr. Neil said that modern materials and design principles make possible the development of steam, or vapor, engines for motor trucks and buses with such advantages as one-half to one-third present powerplant sizes and highest engine efficiency. He indicated that shortcomings of the early "steam automobiles" now can be corrected, explaining that virtually none of today's commonly-used materials, such as high-strength cast irons and alloy steels, then were available.

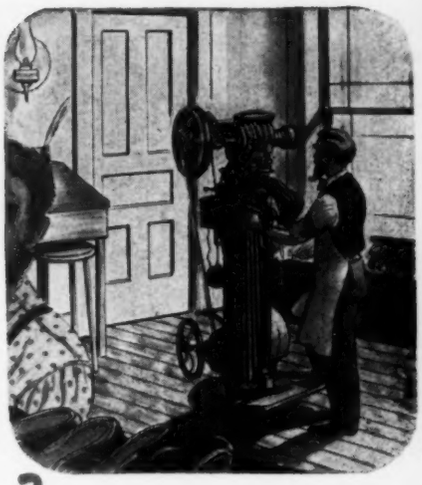
Mr. Neil contended that modernized steam reciprocating powerplants can provide such further advantages for commercial vehicles as simplification of fuel carburetion and ignition, silent operation, elimination of clutch and transmission, and smoothly constant acceleration. Steam turbines also might be adapted to vehicular use, he added, explaining that both types offer low overall cost, use cheaper fuels, reduce vibration, and assure both infallible cold-weather starting and heat for interior comfort.

"It is considered a credit to the steam vehicle designers of the early 20th century," Mr. Neil said, "that they produced vehicles of the calibre they did. The fact that internal combustion engines could utilize the poorer materials more readily than a steam vehicle is believed to be one of the basic major reasons why 'gas cars' gained so rapidly in popularity."

(*Please turn to page* 210)

1 **1851**—John Nichols, a Lynn Shoemaker, adapted the Howe sewing machine to sew the uppers of shoes, doing away with the slow process of hand sewing. This started a fever of invention and innovation in the shoe industry in America that has carried to the present day.

2 **1858**—Lyman R. Blake, of South Abington, Mass., invented a machine to sew soles to uppers. This was subsequently improved by Robert Mathies and manufactured by Gordon McKay. It became famous as the McKay sewing machine . . . set the stage for more progress.



3 **1862**—Goodyear Welt Machine ushered in the third stage. In 1890, electric motors arrived. By 1915—Howell began specializing in industrial type motors. Soon, Howell Red Band Motors, specially designed for application in this and other industries, made their appearance.

Three stages to big business in shoes!

4 **Today**—The shoemaker's kids have shoes! America is the biggest producer of shoes in the world.

The application of specially designed machines, individually powered with industrial type electric motors, has played a vital role in stepping shoemaking into big business . . . improving quality . . . cutting costs.

You can work wonders in your business, too! Investigate now and remember Howell Motors are tried and proved industrial type motors. They are precision-built and designed for the toughest operating conditions—consequently, they will perform better on all jobs.

Try them NOW!

Be wise—meet competition with modern machines powered by industrial type Howell Motors. They're precision-built!

The Howell Protected Type Motor

HOWELL MOTORS

HOWELL ELECTRIC MOTORS CO., HOWELL, MICH.

Manufacturers of Quality Industrial Type Motors Since 1915

A LESSON FOR NEW PRODUCTS

MANY A MACHINE BUILDER has learned under wartime pressure the amount of machining that Laminum shims save . . . and new peacetime products will benefit! (1) Quicker fitting of bearings, gear mesh, etc. (2) Certainty of uniform accuracy because of the precision gauge of the laminations. Want performance data?

Laminum shims are cut to your specifications. For maintenance work, however, shim materials are sold through industrial distributors.

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POWER FACTOR IN YOUR PLANT

"Power Factor in Your Plant", is title of 208 page book by W. C. King, sales engineer, just issued by Cornell-Dublier Electric Corporation, South Plainfield, N. J., that is characterized as being not only easy to read but quickly understandable.

The author puts the questions—hard, commonsense queries about power factor—in everyday language. He lists these questions instead of a table of contents, and then devotes a series of brief chapters to them. Formulas, graphs, and many half tones supplement the text. Also, helpful books and magazine articles are listed along with information as to where and how to get them.

The price of the book is $3.

FREE BOOK ON EXTRUDED PLASTICS

Extruded Plastics, book recently published by the Detroit Macoid Corp., 12340 Cloverdale, Detroit 4, Mich., contains information on the selection of material, tool making, the how and why of extrusion, uses for extruded plastics, the how and why of injection molding, and characteristics plastics. Also included is a brief history of plastics, and a library of more than 270 stock extrusions.

Among the materials described are the following: cellulose acetate, cellulose acetate butyrate, ethyl cellulose, methyl methacrylate, nylon, polyethylene, polystyrene, polyvinyl chloride, and vinyl-choloride-acetate.

Copy is free for the asking.

"AN INTRODUCTION TO ENGINEERING PLASTICS"

This new book by D. Warburton Brown, A.I.M.E., Member of the Institute of the Plastics Industry, and Wilbur T. Harris, Director of Research, United States Time Corporation, constitutes a simplified yet comprehensive presentation of the various plastics that have found commercial acceptance. Included are chapters on the engineering properties and the chemical and physical characteristics of plastics, applications and techniques in handling plastics, and a list of plastic materials together with their numerous trade names and manufacturers.

The descriptions include various thermoplastic and thermosetting materials, and the text is liberally illustrated with half tones and line cuts, and 79 tables. Among the 20-odd chapters are those on Plastics for Gears, Plastics for Bearings, Metal Coating of Plastics, Machining of Plastics, Laminates, Synthetic adhesives, High Frequency Heating, Molds and Mold Design, and Welding Plastics.

The aim of the book is to acquaint "manufacturers, tool designers, chemists and laboratory, technicians, *purchasing agents*" on how to make the best use of plastics.

Publisher, Technical Division, Murray Hill Books Inc., 232 Madison Ave., New York; 274 pages; price $4.00.

ATKINS *Curled Chip* MILLING SAWS

CHEAPER CHIPS

with a "lift-and-curl" cutting action

Because its tooth-form is scientifically right, Atkins New Curled-Chip Circular Milling Saw is reducing the cost of removing metal in plants everywhere. That inward-curved cutting face of the tooth *lifts* the chip with a smooth continuous curling action—no power is wasted *pushing* the chip against a vertical face. And the curled-up chip, like a tightly-coiled clock spring suddenly released, literally explodes from the gullet. There's no clogging, even with non-ferrous metals. There's no excessive heat generated by friction to break down the cutting edge. This means greatly increased cutting life. Check the case histories listed—they offer proof positive that Atkins Curled-Chip Circular Milling Saws permit faster, heavier feeds . . . reduce your downtime . . . save your dollars.

See your industrial distributor first.

READ WHAT HAPPENS when curled-chip teeth go into action

- On electric steel, Atkins 6" Curled-Chip Milling Saw reduced time per cut from 7½ minutes to 10 seconds, increasing production 45 times.
- On a milling machine application, production was stepped up from 20 to 500 units per hour, yet accuracy within .002 tolerance still maintained, with Atkins Curled-Chip Milling Saw.
- On a job cutting tubular bearing shafts, Atkins Curled-Chip Milling Saws increased cutting rates from two to ten cuts per hour—ten times the previous rates.

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Among the ASSOCIATIONS

D. M. Meeker Reelected President of New York Association

NEW officers for the coming year were installed at the regular meeting of the Purchasing Agents Association of New York held June 17 at the Builders Exchange Club. David M. Meeker was reelected president of the group. Other officers are: Donald H. Lyons, 1st vice-president; G. W. Howard Ahl, 2nd vice-president; Edward B. Fielis, treasurer; Harvey C. Hopkins, and Stanley W. MacKenzie (three year terms) and Curran Ridout (one year term), executive committee members.

Mr. Meeker, resident Purchasing Agent for Paraffine Companies, Inc., had a successful first year as president of the association, during which time membership reached its highest point. In purchasing for 18 years, he has had several important posts with the national association, and recently served as general chairman of the New York Association Convention Committee. He has served the local association in many posts during his 16 years membership.

Mr. Lyons is one of four assistants to Norman Aeby, Director of Purchases for Johns-Manville Corp., with the title of Purchasing Agent. One of the most active members of the association since joining in 1937, he has been interested in purchasing education and for the past several years, in co-operation with Henry Meyer has instructed a purchasing course at the Walter Hervey Junior College. He has lectured on purchasing at Polytechnic Institute, Pratt Institute and City College of New York. Last year as chairman of the committee on education he successfully organized and conducted the association's first post-graduate course in purchasing policies and administrative problems. During the current year as chairman of the forum committee he has arranged a series of monthly sessions which has consistently attracted record attendance.

Mr. Ahl has a background of several years of experience on association committees, including two years on the executive board. Educated for architecture at Pratt School of Design, New York University and Ecole des Beaux Arts, Paris, he started his career as architectural designer. In 1933 he went to Columbia Ribbon & Carbon Manufacturing Co. as Purchasing Agent in charge of plant expansion and packaging design. In 1936 he was appointed General Purchasing Agent.

The new second-vice-president was National A.A.U. and National Y.M.C.A. broad jump champion in 1930 and still holds an unofficial world's record for the standing broad jump of 11 ft. 5 in.

Mr. Fielis has completed a quarter of a century as keeper of the association's funds, and holds the longest active membership, with one exception, having joined in 1915, the year of the formal organization. He recently retired as Purchasing Agent for the New York and Queens Electric Light & Power Co., now a part of the Consolidated Edison Co., after 31 years' service.

Mr. Hopkins, a graduate of the University of Illinois in chemical engineering, joined the American Can Co. in the research department in Chicago. He spent three years in the enamelling and decorating department there, and for seven years headed that division for the entire company, with offices in New York. Three years ago he was made General Manager of Purchases for the company. He has been active in the Forum Committee and presided at some of its sessions.

David M. Meeker

Mr. MacKenzie, who served as a lieutenant in the army during World War I after leaving Michigan State College, joined United States Rubber Co. in 1920. After holding various positions he was appointed General Manager of Purchases for the company in 1944. He has been active in the affairs of the association and served on its education committee and the N.A.P.A. Committee on Education. He planned and directed the 1947 Purchasing Institute, which recently completed a successful six-weeks session.

Mr. Ridout started his business career with Crosley Radio Corp., after leaving Miami University, Oxford, O. He was with Thos. Emery's Sons, Inc., Cincinnati as Purchasing Agent and in 1939 became acting County Purchasing Agent. In 1941 he was appointed Purchasing Officer, U. S. Treasury, Procurement Division. Two years ago he came to New York as Assistant Purchasing Agent for the International Standard Electric Corp., the foreign manufacturing subsidiary of the International Telephone & Telegraph Co. He was a member of the Cincinnati association, helped organize the Washington association, and has served on several important committees with the New York association.

Handling Small Orders

R. M. Morrison, Purchasing Agent, The Texas Co., was the principal speaker at the forum discussion on "Method of Handling Small Orders" that preceded the general meeting. He outlined the problem as it concerned his company and the steps taken to meet it, and led the discussion from the floor on the subject. Irving R. Boody, president of Irving R. Boody & Co., Inc., spoke on "Foreign Trade—How It Affects Your Business" at the dinner meeting. Treasurer Fielis was presented with a portable radio in recognition of his long service to the association.

S. F. HEINRITZ GUEST SPEAKER AT CONNECTICUT ASSOCIATION

Stuart F. Heinritz, Editor of PURCHASING, was the guest speaker at the past presidents' night meeting of the Purchasing Agents Association of Connecticut, held June 24 at the Chippanee Country Club, Bristol. His subject was "How Buyers Behave In A Buyers' Market".

LEE J. BUSSMAN RECEIVES AWARD AT ST. LOUIS MEETING

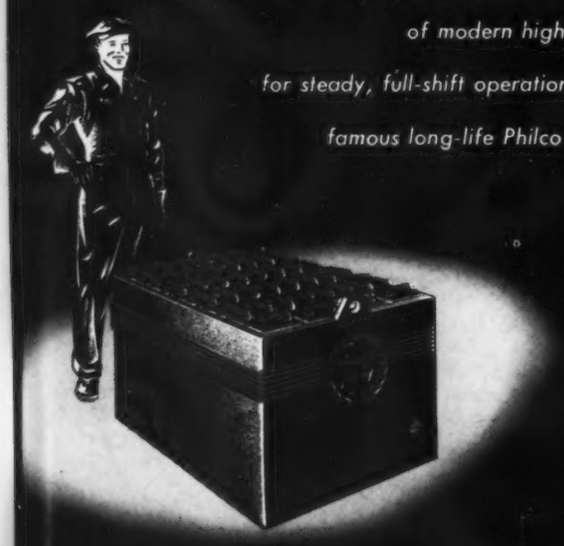
Presentation of the initial Henry L. Brueggemann Award to Lee J. Bussman, Director of Purchases, Bussman Mfg. Co., highlighted the regular meeting of the Purchasing Agents Association of St. Louis on May 27. Mr. Bussman was chosen at a recent district council meeting to receive the award, given by the Chicago association "to the man who has by precept, example or distinguished service contributed to the advancement of purchasing in District 3." The award was named for one of the outstanding members of the Chicago association, noted for his work on behalf of the purchasing profession. Mr. Brueggemann's widow came from Chicago to make the presentation.

John W. Boatwright, manager of sales research, Standard Oil Co. (Indiana) spoke on "Trends In the Petro-

(*Please turn to page* 214)

Best by far for high-speed production

In today's fast-moving production work the modern battery-powered truck has no equal. The development of modern high capacity batteries by Philco, gives trucks 10% or more additional work energy for steady, full-shift operation. Philco extra capacity types are widely used—XL, XVL, AMH and the famous long-life Philco "Thirty". Write for catalogs of specification data.



PHILCO

STORAGE BATTERIES

PHILCO CORPORATION • STORAGE BATTERY DIVISION • TRENTON 7, NEW JERSEY

(*Continued from page 212*)

leum Industry". An open forum, led by Herbert De Staebeler, and the commodity discussion, led by D. M. Baker, preceded the meeting. Congratulations were extended to Paul O'Brien upon his election as vice-president of District 3.

SIXTH DISTRICT PLANS OCTOBER CONFERENCE

National directors of Purchasing Agents Associations in District 6, National Association of Purchasing Agents, met recently in Cleveland to discuss plans for their annual conference to be held in Cleveland on October 3 and 4. The Sixth District comprises the following associations: Akron, Canton, Cincinnati, Cleveland, Columbus, Dayton, Northwestern Pennsylvania, Pittsburgh, Springfield, Toledo and Tri-State.

SUNDERLAND ELECTED MEMPHIS PRESIDENT

Martin Sunderland, Memphis Union Station, was the unanimous choice for president of the Purchasing Agents Association of Memphis at the May dinner-meeting. Mr. Sunderland has served as vice-president for the past two years, and as program chairman. He succeeds James Pidgeon, Pidgeon-Thomas Iron Co., who was elected national director. Other officers elected were: Ed Forhman, Graybar Electric Co., vice-president; Otis Smith, Lowenstein's, secretary; R. H. Schwank, Chicago & Southern Airlines, treasurer, and Clark Thornton, Modern Packages, local director.

OREGON ASSOCIATION NAMES NEW OFFICERS

The following new officers were elected at the monthly meeting of the Purchasing Agents Association of Oregon on May 19: William W. McCulloch, McCulloch & Sons, president; R. P. Stockwell, Gilpin Construction Co., vice-president; Merritt L. Simmons, Portland Traction Co., secretary; E. O. Haymond, Shell Oil Co., treasurer; Clifford B. Amos, Bingham Pump Co., national director. Chosen for the executive committee were: J. C. Jones, A. W. Davis Supply Co.; E. C. Heitkemper, Tracy & Co.; Leonard A. Helgesson, Iron Fireman Mfg. Co.

NAME COMMITTEE CHAIRMEN FOR DISTRICT 7 CONFERENCE

Committee chairmen for the District 7 Conference, National Association of Purchasing Agents, to be held in Louisville, Ky., October 17 and 18, have been named by the Purchasing Agents Association of Louisville as follows:

Program, T. A. Corcoran; publicity, Fred C. Crowell, Jr.; hotel, Albert E. Loeffler, Jr.; registration, Calvin H. Marcus; golf, J. T. Kinberger; reception, Harold B. Borders; banquet, Henry W. Gutmann; district coordination, Edgar E. McCulley; plant visitation, Lloyd Greenebaum; ladies, Louis M. Hartman; sightseeing, Frank G. Hinkebein; entertainment, Elmer T. Meyer; purchasing, L. G. O'Connor; resolutions, Harlan Cross; finances, Edwin V. Bulleit.

Metropolitan Assistants' Club Elects New Officers

Seated, left to right: Alfred A. Northacker, president; Stewart J. Tietjen, chairman of the executive board. Standing: Harold A. Peck, vice-president; Robert O. Condit, treasurer; Lester N. Read, secretary.

Alfred A. Northacker, M. W. Kellogg Co., was elected president of the Metropolitan Purchasers Assistants Club, New York city, at a regular meeting held June 10. Other new officers are: Harold A. Peck, Purolator Products, Inc., vice-president; Lester N. Read, Purolator Products, Inc., secretary. Robert O. Condit, American Oil & Supply Co. was reelected treasurer, and Stewart J. Tietjen, Clarence Whitman & Sons, Inc., retiring president, chairman of the executive board.

Guest speaker of the evening was H. J. Hayes, a director of Hankins Container Corp., who discussed the paper and paper board situation in regard to containers. An open discussion on new ideas for the betterment of the club was also held.

STEEL EXPERT ADDRESSES WICHITA ASSOCIATION

Bennett Chapple, nationally recognized authority on iron and steel manufacture, was the principal speaker at a recent dinner meeting of the Purchasing Agents Association of Wichita.

Representatives of supplying companies attended the affair. Guests included Mayor Charles R. Ritchie and Ira C. Jared, recent member of the executive committee of the National Association of Purchasing Agents.

NORTHERN CALIFORNIA ASSOCIATION MOVES

The Purchasing Agents Association of Northern California has moved its headquarters to the Humboldt Bank Building, 785 Market St., San Francisco 3.

THURSTON H. ROSS RECEIVES SOUTHWESTERN AWARD

For outstanding service to the Purchasing Agents Association of Los Angeles and to the purchasing profession, Dr. Thurston H. Ross was recently presented with the association's annual award, a gold wrist watch.

The official commendation accompanying the award praised Dr. Ross for his "sincerity, unselfishness and unrelenting labor for the improvement of purchasing technique and the advancement of the Association's educational program." He has a long record of fostering educational activities in purchasing, starting in 1922 when he initiated a course in purchasing at the University of Southern California, in conjunction with the Los Angeles group. Honorary membership was conferred on him in 1927. Dr. Ross is a veteran of both world wars, and his last position on active duty with the navy was with the Pacific fleet as special representative on logistics and planning. After completion of active duty he was assigned to setting up a plan of liquidation for the War Shipping Administration and a plan for reorganization of the U. S. Maritime Commission.

(*Please turn to page 216*)

Here's "Big League" service that's hard to beat!

Featuring largest stocks of items carried, 30 second telephone order service and technical assistance when you require it—Purdy offers a complete steel service and a dependable steel supply. Fast, direct phone service throughout Philadelphia and Connecticut at your local call rate.

THIS IS THE *PURDY STEEL* LINE-UP—

COLD FINISHED BARS	BLUE TEMPERED
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Keep tabs on our service. You'll find that playing ball with PURDY—saves you time and money!

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Connecticut: Enterprise 6400 California: Los Angeles—Drexel 7347
Pennsylvania: Philadelphia—Enterprise 6040
TELETYPE No. RUTHERFORD, N. J.—79

DALLAS ASSOCIATION ELECTS OFFICERS

The following officers were elected for the coming year at a recent meeting of the Purchasing Agents Association of Dallas: C. J. Wilson, Lone Star Gas Co., president; R. Linn Crockett, American Liberty Oil Co., and C. J. Castles, Gifford Hill & o., vice-presidents; Louis McElroy, Dallas Power & Light Co., secretary; Ira C. Jared, Sun Oil Co., treasurer; Guy Williams, Seaboard Oil Co., national director.

MACNIDER CHOSEN PRESIDENT OF CHICAGO ASSOCIATION

William A. Macnider, Economy Casting Service Co., was elected president of the Purchasing Agents Association of Chicago at a recent meeting. Other officers chosen include: Wallace B. Burnet, Imperial Brass Mfg. Co., 1st vice-president; Arthur F. Dallia, Justrite Manufacturing Co., 2nd vice-president; H. H. Wise, Scovill Mfg. Co., treasurer;

William A. Macnider

L. R. Seen, Borg & Beck, division of Borg-Warner Corp., secretary; C. L. Otremba, Montgomery Ward & Co., national director. The following new members of the board of directors were also elected: Robert Sedgwick, Chicago Hardware Foundry Co.; Eugene S. Page, Great Lakes Carbon Corp.; William D. Jackson, Container Corp.

CINCINNATI ASSOCIATION TO HOLD STAG PARTY

The Purchasing Agents Association of Cincinnati will hold its Annual Stag Party at the Shoe and Leather Club on July 26. The association held a successful plant visit at the Champion Paper & Fibre Co., Hamilton, O., on May 13.

NEW OFFICERS ELECTED BY DAYTON ASSOCIATION

At the annual May election of the Purchasing Agents Association of Dayton, the following officers were chosen: James F. Murray, Univis Lens Co., president; E. G. Sander, Monsanto Chemical Co., first vice president; Edwin K. Greist, Buckeye Iron & Brass Co., second vice-president; E. E. Reeves, Buckeye Tools Corp., secretary; Robert O. Long, Standard Register Co., treasurer; T. E. Dimke, George H. Leland, Inc., national director; C. Richard Kelly, Monarch System Co., local director.

Herbert Snead, Adequate Wiring Bureau of Dayton, was the guest speaker of the evening.

SWISHER NEW PRESIDENT OF COLUMBUS ASSOCIATION

Mark Swisher, Borden Dairy & Ice Cream Co., was elected president of the Purchasing Agents Association of Columbus at the annual meeting on May 12. Other officers chosen include: Hugh L. Graves, M & R Dietetic Laboratories, Inc., vice president; Robert Hanby, American Blower Co., secretary; Miss Helen J. Zeise, Columbus Bolt Works Co., treasurer; Gerald Roberts, National Electric Coil Co., local director. Otto Dworak, Curtiss-Wright Corp., retiring president, was named national director.

ROCHESTER ASSOCIATION ELECTS NEW OFFICERS

Raymond C. Sauer, Will Corp., was recently chosen president of the Purchasing Agents Association of Rochester. Also elected were: Joseph Ehrstein, first vice-president; Clarence Buss, second vice-president; Percy Coomber, third vice-president, and Wilson B. Wight, secretary and treasurer. Named to the board of directors were: S. W. Aman, Joseph L. Ernst, W. C. Bloomer, Joseph E. Schnorr and David J. O'Connell.

NEW ORLEANS GROUP HEARS CONVENTION NEWS

The regular monthly meeting of the Purchasing Agents Association of New Orleans was held at the Jung Hotel on June 23, with the entire session devoted to national convention topics. Regularly scheduled for June 9, the meeting was advanced to permit members attending the convention to be present. Short talks on the most important subjects covered at the convention were presented by several delegates.

NEW SLATE NAMED BY MILWAUKEE ASSOCIATION

The Milwaukee Association of Purchasing Agents has selected the following slate for 1947-48: for president, F. G. Syburg, Chain Belt Co.; vice president, C. H. Dawley, Ampco Metals, Inc.; secretary, W. H. Pritchard, Kearney & Trecker Corp.; treasurer, N. A. Schowalter, West Bend Aluminum Co.; national director, E. L. Block, Unit Drop Forge, division Fuller Mfg. Co.; directors, F. S. Perkins, Globe Steel Tubes Co., and K. E. Groth, Stolper Steel Products Corp.

The annual meeting and golf party of the association was held at the Tuckaway Country Club on June 13.

JONES ELECTED PRESIDENT OF FORT WORTH ASSOCIATION

H. C. Jones, Fort Worth Poultry & Egg Co., was recently elected president of the Fort Worth Purchasing Agents Association. Other new officers are: W. R. Casstevens, Forth Worth Structural Steel Co., 1st vice-president; E. E. Edwards, Pure Oil Co., 2nd vice-president; S. J. Johnston, Acme Brick Co., secretary-treasurer; directors, Leo Leahy, Armour & Co., and C. A. Carman, Consolidated-Vultee Aircraft Corp.

AKRON ASSOCIATION ELECTS KEPLER

D. A. Kepler was elected president of the Purchasing Agents Association of Akron at a recent meeting. Other officers named in the annual election are: Norman Smith, Firestone Tire & Rubber Co., vice president; S. L. Musson, M. F. Murdock Co., secretary-treasurer; and E. S. Ferry, Ferry Machine Co., senior director.

Directors for the coming year: L. T.

D. A. Kepler

Bishop, Bridgewater Machine Co.; J. R. Brock, Mohawk Rubber Co.; John I. Evans, Ohio Edison Co.; Fred O. Goodnight, Hardware & Supply Co.; and W. K. Peterson, Andrews Alderfer Products Co. Retiring directors are: A. J. Jankowski, Ohio Injector Co., and W. R. Lantz, Sun Rubber Co. Outgoing president C. G. Allen, A. C. & Y. Railroad Co., becomes national director. L. A. Anderson, Twin Coach Co., was named 6th District vice president at a recent district council meeting.

NEW OFFICERS CHOSEN BY SYRACUSE ASSN.

E. R. Francis, Rollway Bearing Co., has been elected president of the Purchasing Agents Association of Syracuse and Central New York. Others elected include: J. E. Edmonds, Lipe Rollway Corp., first vice-president; D. H. Covert, International Business Machines Corp., second vice-president; M. Riepel, Alexander Grant's Sons Co., treasurer; G. L. McCaffrey, Auto-Lite Battery Corp., secretary; C. L. Patchin, Firth Carpet Co., national director.

"America's Position In A Changing World" was the subject of a talk by Robert Kazmayer, world traveler, at the monthly meeting held on May 22.

(*Please turn to page* 218)

O.K. of a Great Critic...

A WHOLE PLANTFUL OF THEM WHO BUILD MOTORS TO SATISFY EXACTING BUYERS!

● Other plants may turn out *more* motors than the Star Plant. But you'll find no *better* motors . . . for when you see the Star Trademark you see the "O.K." on the efforts of hundreds of meticulous craftsmen working to critical standards.

Among them are the men who own the company. For Star's principals are born motor men, and the place to find them is out in the plant or around a drawing board, helping to make Star Motors as good as they can be.

Everybody at Star is exacting about quality . . . in design, materials, workmanship. There's a craftsman's spirit everywhere that words can't cover. But motor buyers who visit us always comment on it. And exacting motor users recognize that Star does things a bit better. That's why they specify Star where a motor must be better than "good enough".

WRITE FOR 8-PAGE DIGEST. It outlines Star Motors (½ to 200 HP) and Generators (to 150 KW) . . . names hard-to-satisfy buyers who are long-time customers . . . tells how Star becomes the "Motor Department" for customers. Star Electric Motor Co., 200 Bloomfield Ave., Bloomfield, New Jersey.

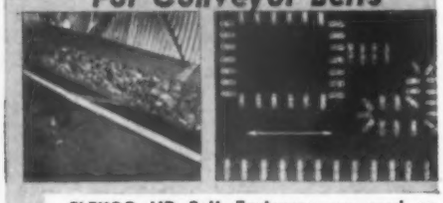
STAR MOTORS

POWER PACKAGED AS YOU NEED IT

Present Day Practice in Belt Fastening

Every man who has anything to do with the purchase, application or maintenance of conveyor, transmission or V-belts will find the bulletins listed below of considerable value in connection with belt fastening work. A knowledge of present day practice in belt fastening helps reduce the loss in machine hours due to belt failures caused by the use of the wrong type of fastener or improper application. We shall be glad to send any or all of them to you or to any of the men in your organization.

For Conveyor Belts



FLEXCO HD Belt Fasteners are used to make a "water-tight" butt joint in conveyor belts ranging from ¼" to 1½" thick and of any width. The view on the right shows the various types of rips that can be repaired with these fasteners and Flexco HD Rip Plates.

Bulletin F-100 gives complete details on how to fasten and repair conveyor belts.

For V-Belts

ALLIGATOR V-Belt Fasteners are now being widely used to fasten B, C and D, open-end V-belting of cross woven fabric core construction now being made by most belting manufacturers. The view at the left shows a typical application of these fasteners to a drive where endless V-belts would require dismantling the machinery to put the belts on the sheaves.

Bulletin V-205 gives complete instructions on how to use V-belt fasteners.

FLEX V Fasteners for A and B belts are also available for lighter duty V-belt drives. Ask for **Bulletin V-14.**

For Transmission Belts

ALLIGATOR Steel Belt Lacing is in world-wide use to make smooth, flexible joints in leather, rubber, balata, stitched canvas or solid woven belts up to ⅜" thick and as wide as they come.

Bulletin A-60 tells how to fasten and repair transmission belts.

Sold by Supply Houses Everywhere

FLEXIBLE STEEL LACING COMPANY
4697 Lexington Street, Chicago 44, Ill.

CANTON ASSOCIATION CHOOSES DIRECTORS

The Purchasing Agents Association of Canton, O., has elected the following to the board of directors for a one year term: Kelly Arnold, Hilscher-Clark Electric Co.; M. J. Birzer, Jr., Superier Switchboard & Devices Co.; Karl R. Foltz, Berger Mfg. division, Republic Steel Corp.; H. A. Grauman, Timken Roller Bearing Co.; Leo F. Ryan, Ohio Power Co.; Mel Shaffer, Electric Sales Co. R. T. Thomas, The Crane Co.

A golf stag was held June 17 at Shady Hollow Country Club. W. C. Hollinger, Canton Hardware Co., was general chairman.

ROBERT R. MCKEON HEADS GRAND RAPIDS ASSOCIATION

Robert R. McKeon, Grand Rapids Hardware Co., was recently elected president of the Purchasing Agents Association of Grand Rapids. Others chosen were:: Earl R. Gillette, Winters & Crampton Corp., vice president; Kenneth F. Hodge, American Box Board Co., secretary; Clifford D. Mueller, Metal Office Furniture Co., treasurer; Max Hensick, Central Michigan Paper Co., national director. Elected to the executive committee were: Stanley T. Cook, Clipper Belt Lacer Co.; Frank Brunett, A. L. Holcomb Co.; James Vogelsang, Wood Specialty Products Co.

The annual outing of the association was held on June 10 at the Green Ridge Country Club.

ELMIRA ASSOCIATION ELECTS NEW OFFICERS

The following new officers were recently unanimously elected by the Purchasing Agents Association of Elmira, N. Y.: V. D. Bates, American La-France Foamite Corp., president; Wilber Symonds, Elmira Foundry, first vice-president and national director; R. T. O'Connor, Thatcher Mfg. Co., second vice-president and program chairman; Charles Swift, Jr., Swift Lubricator Co., secretary; F. R. Baker, American La-France Foamite Corp., treasurer. Directors chosen include: Theodore Coyle, Sylvania Electric Co.; Barker Fawell, Moore, Inc.; Charles Guthie, Mercury Aircraft Corp.; and "Red" Campbell, Eclipse Machine Division.

WM. F. DIEHL HEADS LEHIGH VALLEY ASSOCIATION

William F. Diehl of Bethlehem, Pa., was elected president of the Purchasing Agents Association of the Lehigh Valley, at the May 27th meeting of the association. Other officers elected are, Lloyd W. Weider, Allentown, vice president; K. W. Shock, Easton, secretary-treasurer; T. H. Garrison, Allentown, national director; R. J. Hummel, Allentown—J. W. Maxwell, Bethlehem—and C. O. Richards, Easton, directors.

The principal speaker for the evening was Levy Anderson, associate director of the Philadelphia WAA area, who discussed the benefits derived by industry and educational institutions in the Lehigh Valley of WAA disposals.

Institutions that benefitted, he said, included Lafayette College, Lehigh University, Allentown and Bethlehem School Districts, and Northampton County School District. The real estate disposal in the area already has totalled more than four million dollars in value, he said.

Members of the association participated in a golf-tournament during the afternoon.

MONTREAL ASSOCIATION HOLDS GOLF OUTING

The Purchasing Agents Association of Montreal held their annual golf game at the Whitlock Golf Club, Hudson, Que. on June 17. A dinner at the clubhouse followed the game. Alan Potter, chairman of the golf committee, handled arrangements.

BROWNING ADDRESSES TOLEDO ASSOCIATION

Albert J. Browning, Director of Purchases, Ford Motor Co., addressed the annual management night meeting of the Purchasing Agents Association of Toledo on May 15. Mr. Browning's topic was "The Purchasing Agent of Tomorrow." Many of Toledo's top industrialists attended the dinner meeting as guests of the association.

THE NATIONAL ECONOMY WASHINGTON, D. C.

Senator Joseph C. O'Mahoney, a member of the Joint Committee on the Economic Report, addressed the June meeting of the Purchasing Agents Association of Washington D. C., at the Mayflower Hotel on June 10, his subject being "The National Economy". Senator O'Mahoney outlined the responsibilities of purchasing agents in buying for business and government and highlighted his address with the statement that "Government and business must realize that under existing world conditions, the salvation of this country depends upon continuing maintenance of free enterprise and free government."

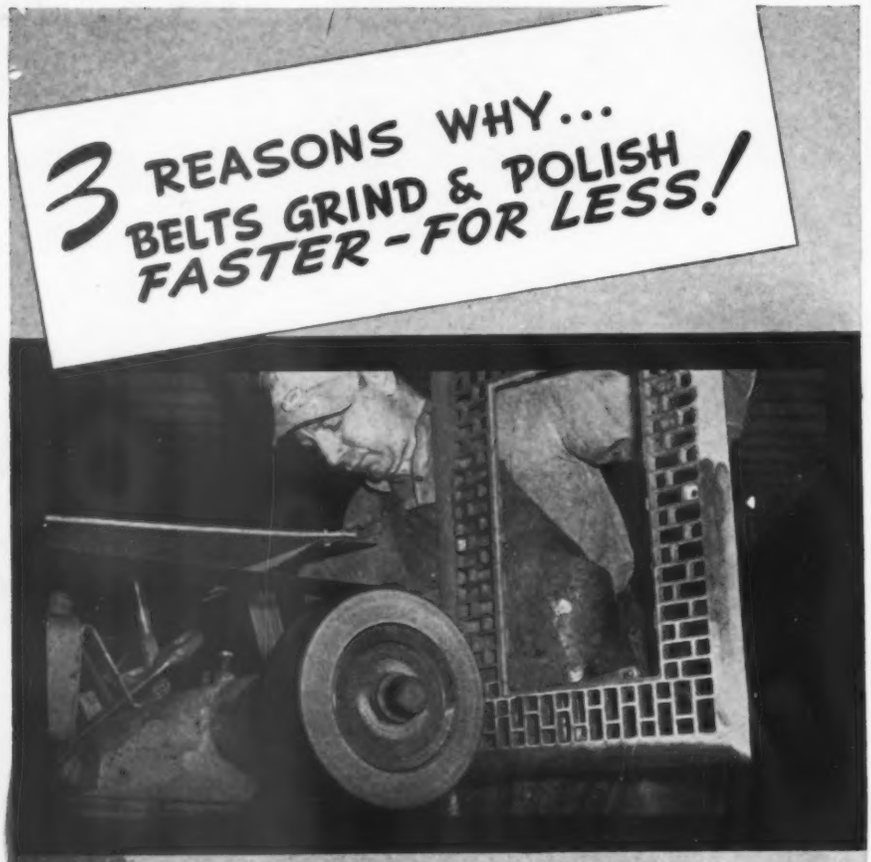
This "Executive Night" meeting was one of the largest attended meetings the Washington association has ever held. Senator O'Mahoney's address was recorded by Station WINX for broadcast later in the evening.

R. M. Brennan, purchasing officer, District of Columbia, discussed a plan to formulate a Hospital Purchasing Institute in Washington, similar to such an organization in Philadelphia. The plan received the endorsement of the local association.

(*Please turn to page 220*)

A COMPLETE LINE
of fine Machinists' Tools

BROWN & SHARPE TOOLS



√ BELTS ARE SHARPER

√ BELTS ARE COOLER

√ BELTS HAVE GREATER CUTTING AREA

Production increases of 3 and 4 to 1 are the usual result of conversion from abrasive set-up wheels to factory-coated abrasive belts through the use of idler backstands. And the reasons for this margin of improvement are simple engineering facts.

Belt coatings are sharper because each individual abrasive grain on a belt is twice anchored in true cutting position with a uniform, controlled coating of adhesive.

Belts cut cooler because each cutting grain travels a longer orbit between work contacts, thus permitting complete air cooling action at each revolution.

Belts have greater cutting area because of the additional length required for traverse from work wheel to idler pulley, and return.

Let us demonstrate the production improvement of the belt-backstand method in your plant. Our Field Engineers are equipped with portable bench units for just that purpose. Your Industrial Distributor salesman will gladly arrange a convenient date following his next call.

BEHR-MANNING
(DIVISION OF NORTON COMPANY)
TROY, N. Y.

L. A. ASSOCIATION INSTALLS RECENTLY ELECTED OFFICERS

New officers for the coming year, elected by the Purchasing Agents Association of Los Angeles at the annual meeting, May 8, were installed at the June 19 monthly meeting. They are Al B. Tietjen, South-West Welding & Mfg. Co., president; Burt M. Pulver, Barker Bros. Corp., first vice-president; C. H. Tuttle, Standard Oil Co. of Calif., second vice-president; Dean L. Fisk, Los Angeles Turf Club, Inc., secretary; L. T. Bleasdale, Zellerbach Paper Co., national director.

Delegates to the national convention gave their reports at the meeting.

FORT WAYNE ASSOCIATION HOLDS ELECTION

L. C. Wakefield, Minnesota Linseed Oil Paint Co., was elected president of the Purchasing Agents Association of Fort Wayne at the May 19 meeting. Noah Tilman, General Electric Co., was named vice-president; T. A. Burns, Lincoln National Insurance Co., secretary, and Robert L. Colfax, Farnsworth Television and Radio Corp., treasurer. Elected to the board were H. Jack Printz, H. W. Buehler, Gerald R. Smith, J. Ray Laughlin and Edward E. Steinhauser. Mr. Smith was re-elected national director.

"IMPORTANCE OF PURCHASING" WESTERN MASSACHUSETTS

A talk on "The Importance of Purchasing's Function to Management", highlighted the first meeting, 1947-48 season, of the Purchasing Agents Association of Western Massachusetts, held in Springfield on May 22. Tom Clark, manager of the Fisk Division, U. S. Rubber Co., was the guest speaker.

The newly instituted round table discussions covering purchasing problems preceded the dinner portion of the meeting, with D. B. Sistare, Wico Electric, leading the group on the subject of "Inventories."

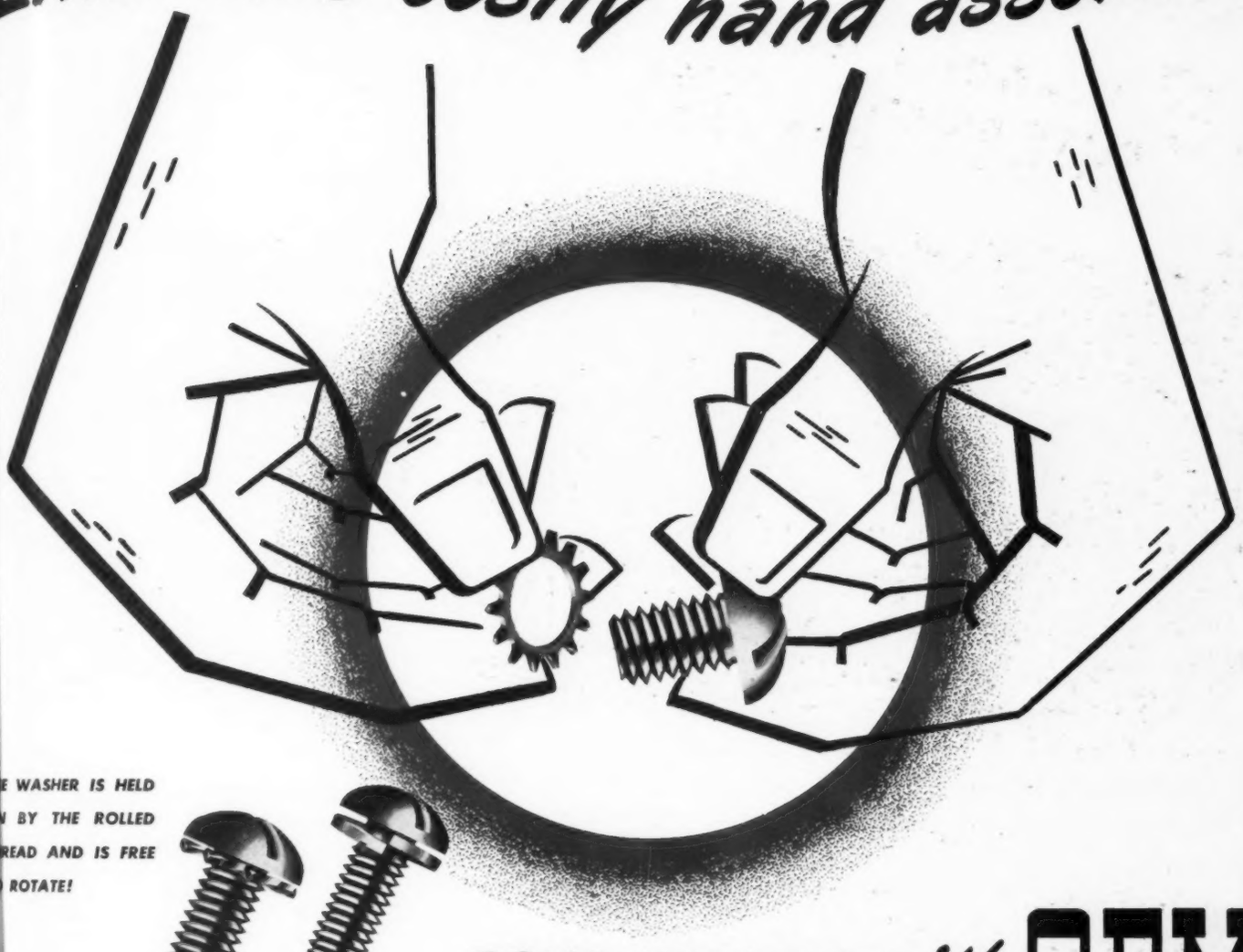
WASHINGTON ASSOCIATION HOLDS MONTHLY MEETING

Industrial, commercial and governmental purchasing men from throughout Western Washington gathered at the Washington Athletic Club in Seattle on June 12 for the monthly dinner meeting of the Purchasing Agents Association of Washington. Vice-president Kenneth A. Knudson presided.

Featured on the program were reports of delegates attending the recent national convention in New York. The following reported: Harold Mitchell, Housing Authority of King Country; Jack Lamb, St. Regis Kraft Co., J. M. McCullough, Pennsylvania Salt Mfg. Co.; and Earl C. White, Washington Purchasing Agent and manufacturer.

(*Please turn to page 223*)

Eliminate costly hand assembly



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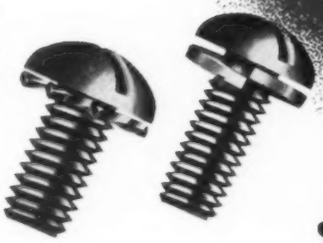
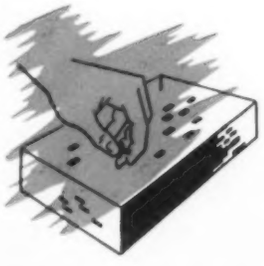
READ AND IS FREE
O ROTATE!



save money with SEMS



TWO PARTS PRE-ASSEMBLED; ONLY ONE UNIT TO ORDER, STOCK AND HANDLE.

DRIVING IS EASIER, FASTER. SEMS ARE PERFECT FOR HARD TO REACH PLACES.

NO DROPPED OR WASTED WASHERS. ASSEMBLY MOVES SMOOTHLY.

ANY OF THESE MANUFACTURERS WILL SEND YOU THE SEMS DATA BOOK, FREE!

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Rockford, Illinois

The National Screw & Mfg. Co.
Cleveland, Ohio

New England Screw Co.
Keene, N. H.

Pheoll Manufacturing Co.
Chicago, Illinois

Russell, Burdsall & Ward
Bolt & Nut Co.
Port Chester, N. Y.

Scovill Manufacturing Co.
Waterville Division
Waterville, Conn.

Shakeproof Inc.
Division of Illinois Tool Works
Chicago, Illinois

Steel Co. of Canada, Ltd.
Hamilton, Ont., Can.

Stronghold
Screw Products Inc.
Chicago, Ill.

American Screw Co.
Providence, R. I.

Central Screw Co.
Chicago, Ill.

Chandler Products Corp.
Cleveland, Ohio

Continental Screw Co.
New Bedford, Mass.

Corbin Screw Division
The American Hardware Corp.
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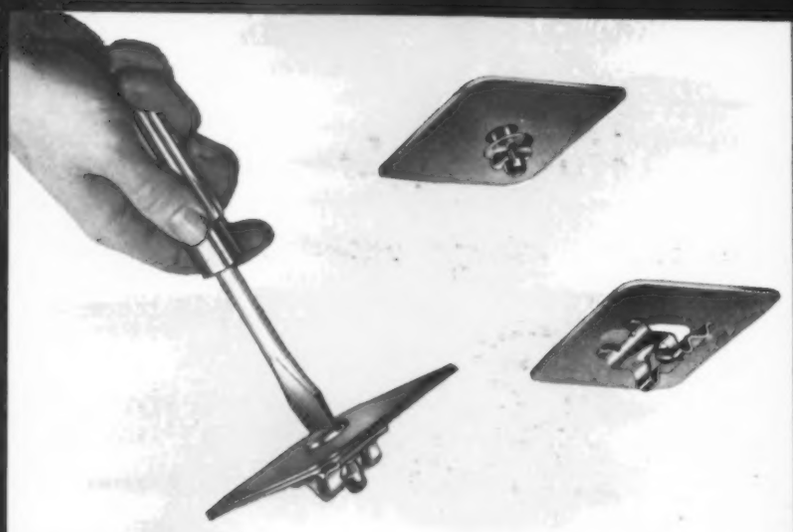


FASTER OPERATION FOR ACCESS PANELS

¼ TURN OPENS OR LOCKS

SHAKEPROOF

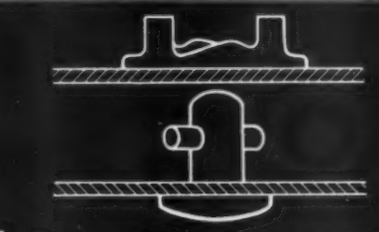
Q–FASTENERS

Shakeproof Q-Fasteners have been developed around the cam locking principle to combine secure locking of cover plates and panels with the easiest possible access to the housed units. These special fasteners eliminate the possibility of accidental opening or loosening . . . eliminate rattles and provide a clean smooth appearance since only the stud head is visible on the exposed surface.

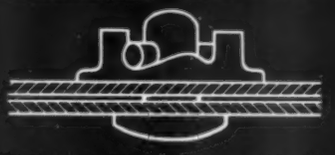
Q-1 Fasteners, illustrated at right, are designed for use where extreme loads are encountered. Their design provides a powerful lock which when assembled also has great structural strength. Installation is easy as there are only 3 parts—stud, cross pin and spring receptacle.

Q-2 Fasteners are similar in action to the Q-1 but the design has been simplified to speed up assembly and reduce costs. Where loads are not extreme the Q-2 provides fast locking and unlocking with long dependable performance assured.

Add the convenience of fast operation to the panels, doors and covers of your product. Write for Shakeproof Engineering Data Bulletin No. S-75 today!



1. Stud and cam type receptacle of Q Fastener assembled to sheets.

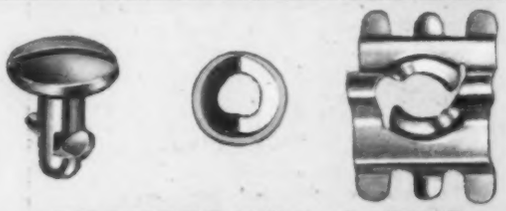


2. Stud inserted into receptacle with lugs ready to engage cams.

3. Stud in locked position after quarter turn with lugs resting against stops and holding sheets firmly together.

TWO STANDARD TYPES

SHAKEPROOF Q-ONE



SHAKEPROOF Q-TWO

SHAKEPROOF inc.

"fastening Headquarters"

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Plants at Chicago and Elgin, Illinois • In Canada:
Canada Illinois Tool, Ltd., Toronto, Ontario

WESTERN MASS. GROUP ELECTS NEW OFFICERS

Officers recently elected by the Purchasing Agents Association of Western Massachusetts were erroneously reported in the last issue of this magazine. The following are the new officers for 1947-48: Carl C. Tootill, Van Norman Co., president; Donald B. Sistare, Wico Electric Co., 1st vice-president; James Sinclair, Pratt & Austin Co., 2nd vice-president; John B. Donovan, Valentine Concrete Co., secretary-treasurer; Raymond W. Fleury, A. G. Spalding & Bros., Inc., national director.

BALTIMORE ASSOCIATION TO RESUME EXHIBIT

The annual "Manufacturers' Products Exhibit" sponsored by the Purchasing Agents Association of Baltimore will be resumed in November, it has been announced. These affairs were suspended during the war.

The regular meeting of the association was held May 21 at the Lord Baltimore Hotel. Guest speakers were George Stuart Brady of Industrial Materials Service, speaking on "Old and New Materials in the Postwar Era", and Walter E. Kennedy, chief of the sales tax division of the state of Maryland.

NEW ORLEANS ASSOCIATION HEARS SALESMAN'S VIEW

Members of the Purchasing Agents Association of New Orleans received a first hand appraisal of themselves when C. C. Walther, owner of Walther Bros. Co., addressed their meeting on May 27, on "The Purchasing Agent as the Salesman Sees Him". Two dramatizations, presenting the right and wrong relationship between salesman and purchasing agent, followed the address. The affair was arranged by the Educational Committee of the association.

GEORGIA ASSOCIATION ELECTS MORRISON

Roy C. Morrison was recently elected president of the Purchasing Agents Association of Georgia. Mr. Morrison, Purchasing Agent for the Auto-Soler Co., is also a Fulton county election official.

Other new officers are: J. R. Anthony, Georgia Tech, 1st vice-president; J. R. Carmichael, George Power Co., 2nd vice-president; P. J. Rogers, Agnes Scott College, secretary, and W. D. Potts, Southeastern Pipe Line Co., treasurer. Directors are: J. M. Elliott, Atlanta Gas Light Co.; W. Lane Crocker, H. W. Lay & Co., and W. Pitts, Atlantic Steel Co.

(*Please turn to page 224*)

How to relax, when something's needed fast!

Even if your suppliers are thousands of miles away, and you need parts and supplies *right now* — let others do the worrying, but never you. Specify Air Express and get delivery in a matter of *hours.*

Air Express goes coast-to-coast overnight, and speeds up to five miles a minute insure same-day delivery between many U.S. towns and cities. Use it regularly, and you'll be paid off in greater customer satisfaction and smooth-running, efficient operation. To solve overseas shipping problems, investigate fast, frequent, inexpensive International Air Express.

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- Low rates—special pick-up and delivery in principal U.S. towns and cities at no extra cost. • Moves on all flights of all Scheduled Airlines.
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Just phone your local Air Express Division, Railway Express Agency, for fast shipping action . . . Write today for Schedule of Domestic and International Rates. Address Air Express, 230 Park Ave., New York 17. Or ask for it at any Airline or Railway Express Office. Air Express Division, Railway Express Agency, representing the Airlines of the U.S.

AIR EXPRESS

AIR EXPRESS

GETS THERE FIRST

Fastest delivery—at low rates

65 lbs. of machine parts in Louisville had to get to Dallas *fast.* Picked up at 5 PM on the 25th, they were delivered at 7 AM on the 26th. For complete door-to-door service, the Air Express charge was only $15.96!

SPECIAL WASHERS

We offer you the advantage of more than 25 years of specialized experience in designing and manufacturing Special Washers. During these years we have accumulated over 10,000 sets of tools, one of which may exactly fit your specifications.

SMALL STAMPINGS

As in the case of Special Washers, we can supply Small Stampings in any metal, in any quantity. Hundreds of satisfied customers are testimony to our high quality and reasonable prices. Send us your specifications or prints.

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Purchasing is a Partnership

of Sales Executive strategy and the pride of purchasing at proper (lower) costs.

This We Know . . .

Sales-Minded Executives realize the importance which label design holds in merchandising and sales strategy.

This, Some of Us Know . . .

That manufacturing, shipping, exporting and maintenance of various products can be helped or hurt by THE TYPE OF THE PACKAGE which holds the product.

Rapid Realization of New Advantages of Spirally Wound Containers is Amazing!

Cleanliness . . . Compactness . . . Added Strength . . . Foil Linings for protective purposes . . . lower shipping Costs . . . Novelty Shapes. THESE ARE ONLY A FEW OF THE MANY ADVANTAGES OF CLEVELAND CONTAINERS.

Made as elaborate or as simple in design as you desire.

Consult our Creative Design Dept.

All-Fibre Cans
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Spirally Wound Tubes and Cores for All Purposes
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The CLEVELAND CONTAINER Co.
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PRODUCTION PLANTS also at Plymouth, Wisc., Ogdensburg, N. Y., Chicago, Ill., Detroit, Mich., Jamesburg, N. J.
PLASTICS DIVISIONS at Plymouth, Wisc., Ogdensburg, N. Y. • ABRASIVE DIVISION at Cleveland, Ohio
New York Sales Office—1186 Broadway, Room 223
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POSTWAR PROBLEMS AND SALES PROBLEMS, TULSA

A joint discussion of postwar purchasing and sales problems featured the monthly meeting of the Purchasing Agents Association of Tulsa, May 13. Brooks Gutelius, president of United Supply & Mfg. Co., and Robert McCoy Jr. and R. B. Hillborn, Jones & Laughlin Steel Co., spoke from the sales point of view. Speakers for the purchasing agents were C. G. McLaren, Shell Oil Co., and V. M. Lewis, Dowell, Inc.

NEW ENGLAND ASSOCIATION HAS SUMMER OUTING

The annual Summer Outing of the New England Purchasing Agents Association was held at the United Shoe Machinery Athletic Association country club, North Beverly, Mass., on June 11. Golf was the feature attraction, with softball, tennis, horseshoes and bowling drawing many enthusiasts. Dinner was served in the evening.

SAN FRANCISCO HOLDS ANNUAL MEETING WITH SALES MANAGERS

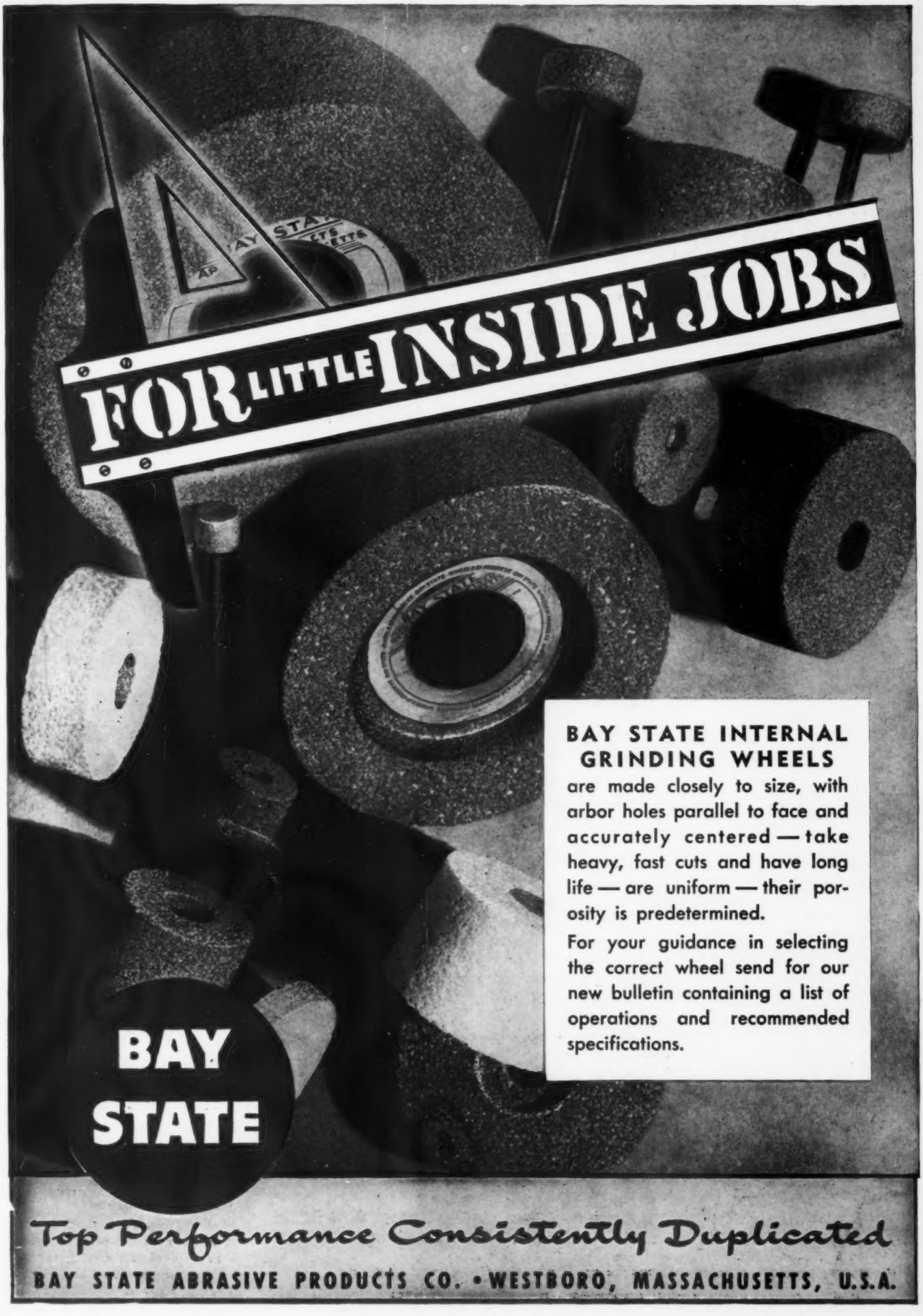
The 29th annual joint meeting of the Purchasing Agents Association of San Francisco and the San Francisco Sales Managers Association was held on May 8 at the Hotel St. Francis. George W. Aljian, president of the National Association of Purchasing Agents, and Ernest A. Ingold, automobile dealer and director of the World Trade Center, Inc., were guest speakers.

BRITISH COLUMBIA ASSN. ELECTS NEW OFFICERS

R. A. Baker, Powell River Co., Ltd., was elected president of the Purchasing Agents Association of British Columbia, at a meeting held in Vancouver on May 13. Other new officers are: Alex Dunbar, Vancouver Supply Co., Ltd., vice-president; A. J. Shaw, Bennett & White Construction Co., Ltd., secretary; Harold G. Miller, Northern Construction Co., Ltd., treasurer; J. B. Watson, Silbak Premier Mines, Ltd., national director.

DIAMOND CORE DRILL FITTINGS COMMERCIAL STANDARD

Commercial Standard CS17-47, Diamond Core Drill Fittings, effective from July 1, 1947, is announced by the Division of Trade Standards, National Bureau of Standards, Washington, D. C. The purpose of the Standard is to provide dimensional interchangeability in essential diamond core drill firrings as made by American manufacturers. It covers standard designs and tolerances with controlling dimensions for rod couplings, drill rods, core-barrel bits, casing couplings, casings, and casing bits.


FOR LITTLE INSIDE JOBS
BAY STATE INTERNAL GRINDING WHEELS
are made closely to size, with arbor holes parallel to face and accurately centered — take heavy, fast cuts and have long life — are uniform — their porosity is predetermined.
For your guidance in selecting the correct wheel send for our new bulletin containing a list of operations and recommended specifications.
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Top Performance Consistently Duplicated
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FOR PARTS LIKE THESE

TEST TOOLS
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SHIMS
PUNCH DIES
TEST GAGES
SNAP GAGES
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Get rolling faster by saving time on those countless jobs of making templates, test tools, gages, dies, small parts, pieces, etc.

With Starrett Precision Ground Flat Stock, you simply lay out the part and go ahead. No hunting for odd pieces of stock, no time lost in preliminary roughing or precision grinding.

OIL OR WATER HARDENING

Available in two types; a non-deforming, spherodized annealed, electric furnace, oil hardening tool steel and a specially made, high grade, water hardening tool steel. Both made in 18 inch lengths in widths from ½ to 6 inches and in thicknesses from a sixty-fourth to an inch and more. Each piece is rust protected, stamped for type and size, and packed in a grease-proof envelope clearly marked for quick identification and with hardening instructions.

Your mill supply distributor has it in stock or write for Ground Flat Stock Folder "P".

Buy Through Your Distributor
THE L. S. STARRETT CO. • ATHOL • MASSACHUSETTS • U. S. A.
World's Greatest Toolmakers

STARRETT
PRECISION TOOLS • DIAL INDICATORS • STEEL TAPES • GROUND FLAT STOCK
HACKSAWS • BAND SAWS FOR CUTTING METAL, WOOD, PLASTICS

NYLON & USTEX YARN LENGTHEN CONVEYOR BELT LIFE

A new conveyor belt, said to feature greatly increased strength and durability, has been developed by the United States Rubber Co., Rockefeller Center, New York, N. Y., for the conveying of coal, iron ore and other bulky materials over long distances. Key to this increased strength is a new textile construction of nylon and Ustex yarn that increases the permissible working tension of each ply two and one-half times and permits the use of more plies.

The new product is especially designed for use in mines, quarries and large dam construction projects, and, the company claims, will save industry many thousands of dollars annually through lower maintenance costs and improved efficiency of material handling equipment. Ustex yarn was developed by U. S. Rubber textile scientists and was used during the war in the construction of parachute harnesses.

NEW TYPE OF CONSTRUCTION GIVES LIGHTER TRUCK BODIES

Truck bodies with an approximate weight 1,500 lbs. lighter than the average are now being constructed from a combination of aluminum and Tekwood, veneer kraft laminate manufactured by the United States Plywood Corp.

The new type of construction is known as "Armorlite" and consists of the lamination of an outer "skin" of aluminum, bonded to Tekwood panels and fitted into slots of extruded magnesium girders. A 12-ft. body constructed with the combination of materials weighs approximately 1,800 lbs. The whole superstructure is mounted on re-inforced steel floor. Any sectional panel may be readily removed if damaged and renewed by die-formed replacements. Standard size of the truck body is 88″ in clear inside width and 78″ in height. Manufacturer is the Electric Boat Co., New York, N. Y.

WHAT IS SURFACE GRINDING?

Surface grinding is the name applied to the grinding of plane or flat surfaces. Surface grinders are of several types:

(a) Reciprocating table and horizontal wheel spindle grinding with the periphery of the grinding wheel.
(b) Reciprocating table and horizontal wheel spindle grinding with the edge or side of a cup or cylinder shaped grinding wheel.
(c) Reciprocating table and vertical wheel spindle grinding with the edge or side of a cup or cylinder shaped wheel.
(d) Rotary table and horizontal spindle grinding with the periphery of the wheel.
(e) Rotary table and vertical spindle grinding with the edge or side of a cup or cylinder shaped wheel.

Norton *Grits and Grinds*

(*Please turn to page* 228)

Soon Diesel Power to deliver the goods

THE PACE WILL BE FASTER-THAN-EVER as a battery of giant new Diesels power crack Katy freights to faster schedules and finer service than ever before.

RADIO-CONTROLLED NEW DIESEL SWITCHERS will speed handling at terminal points.

MIRACLES OF MODERN RAILROADING SCIENCE... courteous, trouble-free handling of all your Southwest shipping needs... still more precious hours clipped from your freight-in-transit time... YOURS from the Southwest corridor's main supply line. ***OKAY KATY!***

578

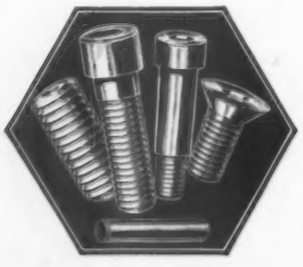
MISSOURI-KANSAS-TEXAS LINES

Serving the Southwest

From crankcases to sea-wings, in oil lines and hydraulic fluid lines, these plugs prevent leakage where safety depends upon it. The extra Allen HOLDING-POWER prevents loosening under vibration.

Cold-drawn of special-analysis *ALLENOY* steel (standard); also available in duralumin, bronze, brass, stainless steel and other metals. Lead screw threaded to close tolerances; scientifically heat-treated for *balanced* hardness and toughness. Here are all the strong-points of Allen Hex-Socket Screws,— for the perfect seal at drain points.

Your local Industrial Distributor supplies also Allen Hex-socket Set Screws, Socket Head Cap Screws, Flat Head Cap Screws, "Tru-Ground" Shoulder Screws and "Tru-Ground" Dowel Pins. Ask for samples.



THE ALLEN MFG. COMPANY
HARTFORD, CONNECTICUT, U. S. A.

Space and Weight Reduction Feature Axial Gap Motor which is Less than Half Size of Conventional Motor

An entirely new type of electric motor designated as Axial Air-Gap, marking a radical departure in motor design, has been introduced by Fairbanks, Morse & Company, Chicago.

Principles of the axial air-gap motor are revolutionary. It is distinguished by the fact that the magnetic lines of force follow a path parallel to the shaft (or axis of rotation) as compared to a radial path taken by the magnetic flux in the conventional motor.

This new line of motors ranging in size from ⅓ to 10 hp is suitable for horizontal or vertical flange mounting, or on an angle base for belt drive.

The outstanding features are space and weight reduction, the new motor being less than half the size of the conventional type motor and weighing less by approximately 30%, yet retaining all the necessary characteristics of sturdiness and power requirements, it is said.

The length is approximately one-half that of the conventional motor with a diameter from one to two inches larger. The accompanying chart illustrates the size of axial air gap motors from one to 10 hp compared to sizes of standard NEMA conventional frame sizes of the same hp and speed rating.

The axial air gap motor is easy to cool and ventilate. The rotor diameter is large, fans are cast integral with the spider and most of the coil extensions are on the outside. The rotor, fully exposed to ventilation, offers no problem.

The motor is primarily a flange mounted machine suitable for either horizontal or vertical operation. The motor itself is the same whether used horizontally or vertical. Only the cover is changed. As a flange mounted motor it is said to be superior to conventional construction. The frame and bearing supports are of one piece.

For chain, belt or V-belt drives, belt adjustment is accomplished by use of a pivot base with a three point suspension.

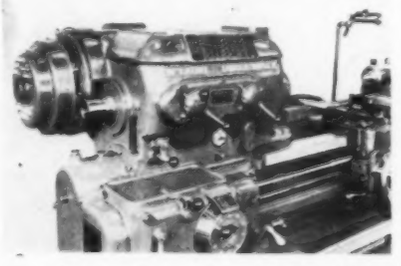
The motor can be readily inspected, cleaned and lubricated by simply removing the cover of the motor, and can be operated with the casing removed.

The WR^2 or flywheel effect of the motor is approximately three times that of corresponding conventional motors. This is said to be of particular advantage in such applications as punch presses, oil well pumping units, etc., where the added flywheel effect reduced the amplitude of the peek electrical load on the motor. It is a decided disadvantage on applications involving repeated plugging and reversing where small diameter rotors are essential. The axial air gap motor should not be used on applications of the latter type.

Speed-Torque characteristics and op-

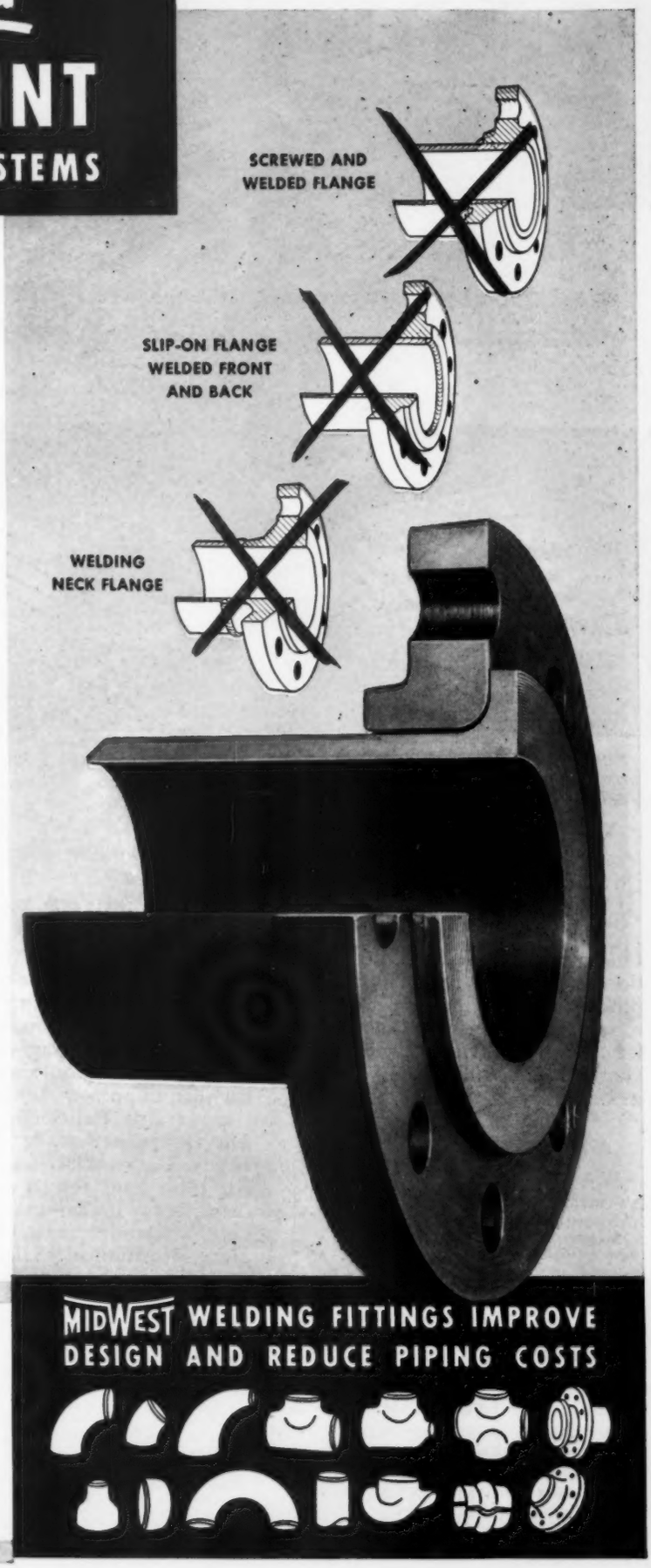
(*Please turn to page* 234)

Frame size companion 5 hp, 1800 rpm—motors type QZKU frame TU2548V standard. Protected frame (conventional construction) Type QZAU frame 60105 (axial air-gap construction).



Axial Air gap motor, 10 hp, 1800 rpm, frame 65117 on 18" lathe

THE *Preferred* FLANGED JOINT FOR WELDED PIPING SYSTEMS



MIDWEST LAP-JOINT STUB ENDS

For making connections to boilers, pumps, valves and other flanged outlets (and where piping must be frequently cleaned or inspected for corrosion), Midwest Lap-Joint Stub Ends have a tremendous advantage over flanges that are welded to the pipe (see drawings at right above). The swivel flange on the Stub End makes it unnecessary to accurately line up the bolt holes before welding; "setting up" is simple and quick because no special clamps or jigs are required to hold the face of the flange absolutely perpendicular to the axis of the pipe. The result is a real saving in time and cost of welding.

Another important economy is in erection. Field organizations report a saving of 25% in erection time for making up a joint using Midwest Lap-Joint Stub Ends in comparison with flanges rigidly fixed to the pipe; this saving is even greater when the flanges are on bends.

See Bulletin WF-41 for complete data regarding Midwest Lap-Joint Stub Ends . . . and the many other Midwest Welding Fittings that simplify and save on welded piping.

MIDWEST PIPING & SUPPLY CO., Inc.

Main Office: 1450 South Second St., St. Louis 4, Mo.

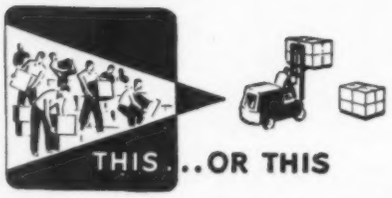
Plants: St. Louis, Passaic (N.J.). Los Angeles, and South Boston

Sales Offices: Chicago — 79 W. Monroe St. • Houston — 229 Shell Bldg. • Los Angeles — 520 Anderson St. • New York — (Eastern Division) 30 Church St. • Tulsa — 533 Mayo Building.

MIDWEST WELDING FITTINGS IMPROVE DESIGN AND REDUCE PIPING COSTS

Generalift

PALLETS



One workman and fork lift truck do the work of many. Instead of picking it up and laying it down, moving it piece by piece—many items can be consolidated into single loads, palletized, moved as one.

That's why so many thousands interested in the speedier and more efficient handling of materials, components, and finished products are turning to pallets. That's why you, too, should check on this important subject *today.*

Generalift Pallets, Skids, and Lift Boxes are made of sturdy hardwood construction. Designed for long life, rough handling, extra heavy loads—made to your specific requirements. For complete information, write for free Pallet Booklet.

IMPORTANT NOTICE: *New plants and expanded production facilities are now in full operation. Your inquiry or order will receive* prompt attention.

25 YEARS YOUNG
1922-1947

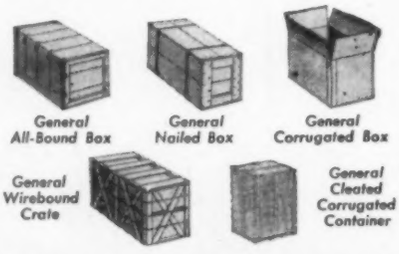
ENGINEERED SHIPPING CONTAINERS

General BOX COMPANY

GENERAL OFFICES: 48 West Illinois St., Chicago 10, Ill.

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon.

Continental Box Company, Inc.: Houston, Dallas.



ECONOMIZE . . . PALLETIZE . . . GENERALIZE!

HUM-DRUMS—SQUARE DRUMS FOR SHIPPING

Hum-Drums recently developed and now being manufactured by Hummel & Downing Co., Milwaukee manufacturers of boxboard, shipping containers and folding cartons, are an entirely new type of drum for shippers using round containers, wooden boxes and kegs for bulk shipments of their products.

A Hum-Drum, as seen from the illustration, is square and offers a 30% saving in warehouse and shipping space besides requiring far less dunnage and bracing in car loading. It is made of three pieces of solid fibre board, top, bottom, and innersleeve, and is of a patented type of construction that provides triple wall thickness on all six panels and double score line strength on all edges. The solid fibre board used is of a grade and caliper suitable to the character and weight of the product to be packed.

The design gives a container of great rigidity and compression and retention strength. It is claimed, in fact, that experience has shown that freight claims for losses on shipments have been reduced (98% in one case) to a very small fraction of former claims when Hum-Drums were used in place of other containers.

The Hum-Drum offers a 30% saving in warehouse and shipping space

Some of the products for which Hum-Drums are recommended as bulk shipping containers are: milk powders and derivatives, flake and powdered soap, starch, chemicals in powder or crystal form, nails, washers, nuts and bolts, screw machine products, and numerous other small metal parts. Among advantages claimed for Hum-Drums are:

1. An ideal background for advertising.
2. Ease of handling. (They are small for weight carried and have corners and edges which are readily grasped and held.)
3. 90% saving in warehouse space before filling.
4. 30% greater capacity than round containers of the same height and width.
5. Easier to stack.
6. Easier to open (and reclose if necessary).
7. Stand more rough handling than wood (as evidenced by drop and tumbling tests).
8. Very high top and side compression.

(Please turn to page 232)

WHY ORDER SPECIAL GASKETS?

Look into standardized materials

In many cases even hard-to-fill gasket requirements can be met promptly, economically, with Armstrong's standardized sealing materials. Four basic types, available in 68 different formulations, offer a planned range of properties that can satisfy almost any gasketing specification.

By specifying Armstrong's performance-proved materials, you avoid expensive made-to-order compounding, speed production, and reduce purchasing time.

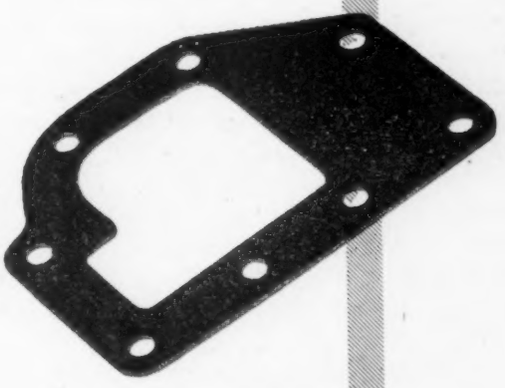
Ask your Armstrong representative for recommendations—backed by our 35 years of gasketing research and experience. Or write today to Armstrong Cork Co., Gaskets and Packings Dept., 7207 Arch Street, Lancaster, Pa.

ARMSTRONG'S FIBER SHEET PACKINGS

2 types. No. 1242, tough, resilient general-purpose material. No. 143, non-corrosive, dense, ideal for thin, lightweight gaskets.

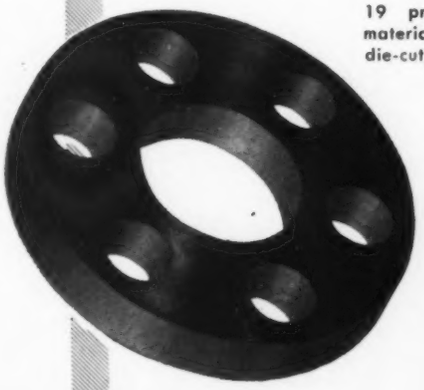
ARMSTRONG'S CORK-AND-SYNTHETIC RUBBERS

19 compositions offering true compressibility, extra resilience, high tensile strength, imperviousness to liquids and gases.



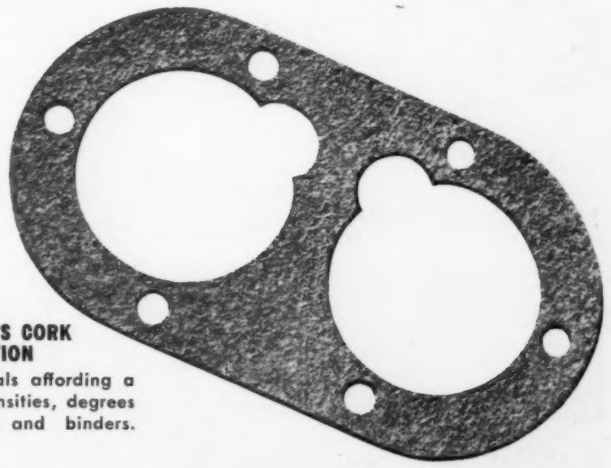
ARMSTRONG'S SYNTHETIC RUBBERS

19 precisely compounded materials. Available molded, die-cut, lathe-cut, or turned.

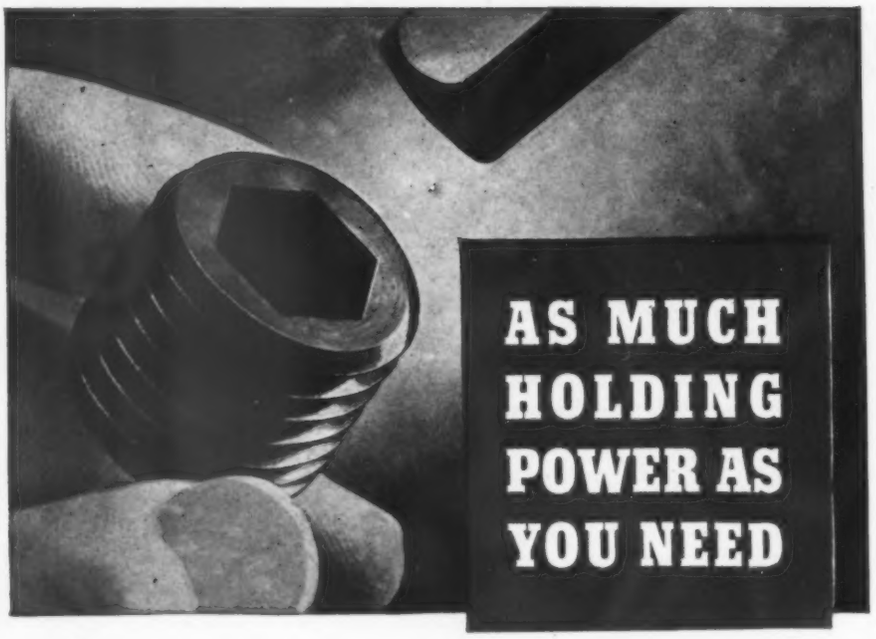


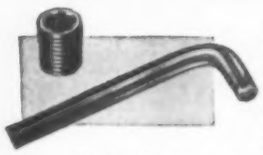
ARMSTRONG'S CORK COMPOSITION

28 low-cost materials affording a broad choice of densities, degrees of compressibility, and binders.



ARMSTRONG'S GASKETS • PACKINGS • SEALS





Whether a "hex" socket screw is right for your fastening, or — because of small size of components, vibration conditions or ease of disassembly — the BRISTO "Multiple-Spline" is needed, you get *maximum strength* from Bristol's "B-Line".

Both the "Hex" and "Multiple-Spline" socket screws represent careful, correct design by Bristol engineers. In addition, Bristol's system of raw material control *keeps* quality up to rigid standards. And Bristol's inspection methods, which include tests for hardness and ultimate strength, gauging for precision of lead and pitch — plus a final visual inspection before packing — result in "Hex" and "Multiple-Spline" screws that feature maximum strength . . . uniformity . . . accuracy.

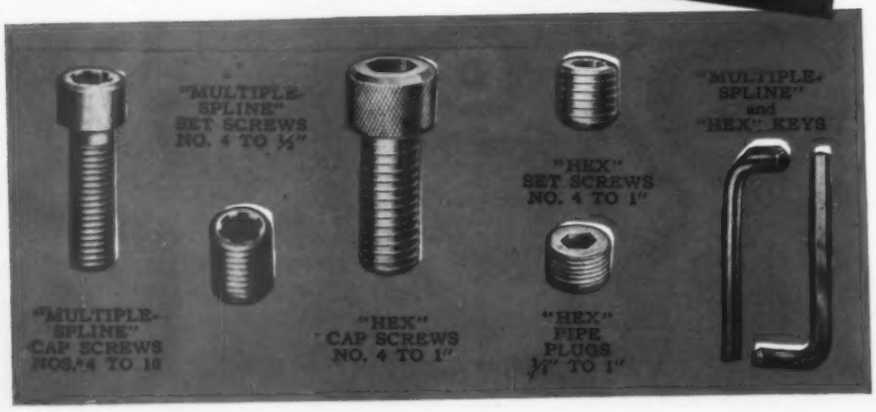
For extra security — at no extra cost — select the right style from the Bristol "B-Line" — made by a manufacturer with 33 years' experience in socket screws. Order from your distributor.

THE BRISTOL COMPANY, Mill Supply Division, 132 Bristol Road, Waterbury 91, Conn.

WHY "MULTIPLE-SPLINE" MEANS
TIGHTER
NO EXPANDING PRESSURE: THE KEY PULLS THE SCREW AROUND

Only the "B-LINE" has the right socket screw for every application

The BRISTOL Company
MILL SUPPLY DIVISION


"MULTIPLE-SPLINE" SET SCREWS NO. 4 TO ½"
"HEX" SET SCREWS NO. 4 TO 1"
"MULTIPLE-SPLINE" and "HEX" KEYS
"MULTIPLE-SPLINE" CAP SCREWS NOS. 4 TO 10
"HEX" CAP SCREWS NO. 4 TO 1"
"HEX" PIPE PLUGS ¼" TO 1"

(*Continued from page 230*)

9. Sift-proof for flaky or coarse powdered products.

10. Usable with bag liners for fine powdered and semi-liquid products, or where a moisture vapor-proof barrier is needed.

Hum-Drums are delivered flat to the user and the assembly is a simple stitching operation performed on a wire stitching machine provided with a post type bottom stitching mandrel.

After filling the top is slipped over the inner sleeve and is sealed to the bottom section with gummed tape. For opening the package this tape is easily sliced with a knife and the tape removed. The Hum-Drum is just as readily closed and sealed again, if desired.

Hum-Drums can be made in the capacities, dimensions and strength required for the various products and can be printed in one or more colors with any advertising desired.

SURPLUS COATING MATERIALS OFFERED BY WAA

Seven to eight million dollars' worth of surplus, government-owned paints, clear and pigmented lacquers, enamels, aircraft dopes and related products are being offered for sale by War Assets Administration. These products generally are best suited for use as production or maintenance finishes in the industrial field.

Most of the paint products available were developed to meet military specifications. Depending on specification or grade, type or class within a specification, they have been formulated for various application—brush, spray or dip. Some of the products are formulated as air drying or as combination air drying and baking finishes; others are for baking only.

A wide range of colors is available mostly in the earth, sea and sky colors used by the military, in gloss, semi-gloss and lustreless finishes. Not all colors of all specifications are available, but there is a wide selection. These paint products are generally packaged in large size containers—55-gallon drums and five-gallon containers. Smaller quantities are available in a few specifications in one-gallon cans and smaller sizes.

These products are available in all WAA Regional Offices with the New York Regional Office having a very substantial quantity.

A.S.T.E. SEMI-ANNUAL MEETING TO BE IN BOSTON IN OCTOBER

The 15th Semi-Annual Meeting of the American Society of Tool Engineers will be held at Boston, Mass., October 30th and 31st and November 1st., 1947. Convention headquarters will be at the Statler Hotel. Harry E. Conrad is executive secretary of the Society, 166 Penobscot Building, Detroit 26, Mich.

(*Please turn to page 234*)

Now . . . prompt deliveries on U·S·S Carilloy Steels

. . . the alloy steels with a Guaranteed Minimum Hardenability

YOUR alloy steel requirements are best served by our stocks of constructional AISI alloy steels readily available from our warehouses. U·S·S Carilloy Steels are manufactured to a ***Guaranteed Minimum Hardenability.*** Charts are furnished with each shipment to you as your guide and assurance of this ***Guaranteed Minimum Hardenability.***

Moreover, when you place an order for U·S·S Carilloy Steel, our metallurgical service goes a step further: *We send you data with each individual shipment showing complete and specific information about the steel you receive.* This specific data on its composition, potential physical properties and fabrication will guide you in obtaining maximum performance from the steel furnished on your order.

Take advantage of all this information in supplying your alloy steel requirements. Use U·S·S Carilloy Steels from our large stocks.

UNITED STATES STEEL SUPPLY COMPANY
USS
STEELS
SERVICE

Symbol of Service FOR STEEL USERS

UNITED STATES STEEL SUPPLY COMPANY

CHICAGO (90)	1319 Wabansia Ave., P. O. Box MM	BRUnswick 2000
BALTIMORE (3)	Bush & Wicomico Sts., P. O. Box 2036	GIlmor 3100
BOSTON	176 Lincoln St., (Allston 34), P. O. Box 42	STAdium 9400
CLEVELAND (14)	1394 East 39th St.	HEnderson 5750
MILWAUKEE (1)	4027 West Scott St., P. O. Box 2045	Mitchell 7500
NEWARK (1), N. J.	Foot of Bessemer St., P. O. Box 479	Bigelow 3-5920 REctor 2-6560, BErgen 3-1614
PITTSBURGH (12)	1281 Reedsdale Street, N. S.	CEdar 7780
ST. LOUIS (3)	21st & Gratiot Sts., P. O. Box 27	MAin 5235
TWIN CITY	2545 University Ave., St. Paul (4), Minn.	NEstor 7311

UNITED STATES STEEL

These originally identical shackle pins from a ten ton truck were used in a comparative lubrication test for a period of one year. A well known conventional lubricant was used on the upper pin. Note the pitting from corrosion, also the excessive wear. LUBRIPLATE was used on the lower pin. Its surface remained bright and true as when the test began, proof that LUBRIPLATE is different . . . better.

LUBRIPLATE

Lubricants definitely reduce friction and wear to a minimum. They lower power costs and prolong the life of equipment to an infinitely greater degree. LUBRIPLATE arrests progressive wear.

LUBRIPLATE

Lubricants protect machine parts against the destructive action of rust and corrosion. This feature alone puts LUBRIPLATE far out in front of conventional lubricants.

LUBRIPLATE

Lubricants are extremely economical for reason that they possess very long life and "stay-put" properties. A little LUBRIPLATE goes a long way.

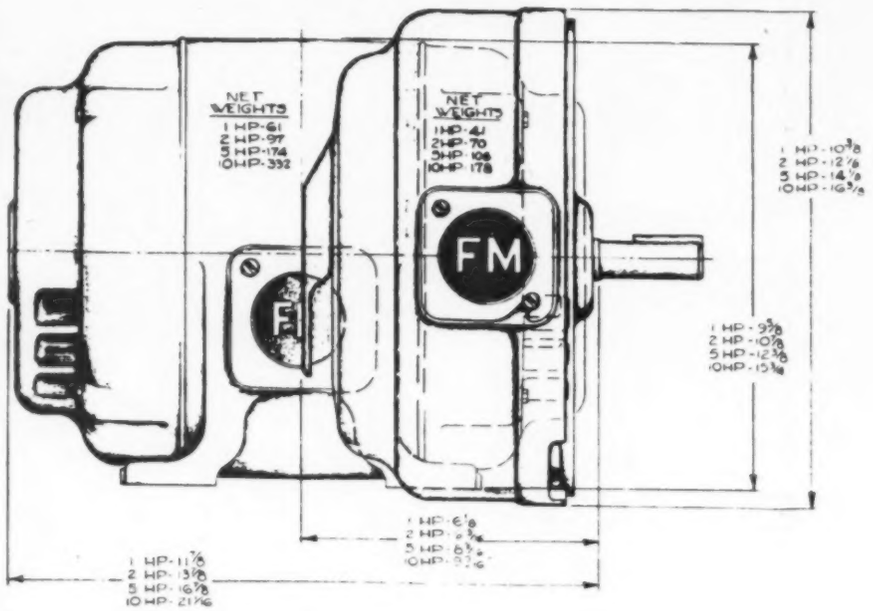
LUBRIPLATE
FISKE BROTHERS REFINING CO.
NEWARK 5, N. J. TOLEDO 3, OHIO
DEALERS FROM COAST TO COAST
CONSULT YOUR CLASSIFIED TELEPHONE BOOK

(*Continued from page 228*)

erating performance are said to be comparable in practically all respects with conventional motors, as are starting, accelerating and maximum torques since these are determined by design factors that can be incorporated in either type.

The axial air gap motor is not intended to supercede or displace the conventional motor in general industrial applications except in those cases where it results in a definite advantage to do so.

Fairbanks Morse claim that the axial air gap motor makes a better flange motor with reduced overhang, and a more accurate mounting, that it is ideally suited to gear motors where the motor is mounted as an integral part of the unit, and for vertical applications where height is important, it is a "natural."



Comparative dimensions and weights conventional type QZK motors versus axial air gap type QZAK

Insulated Steel Building Featured by Low Cost

Illustrating one of the new trends in commercial construction is this Blaw-Knox insulated steel building, adapted to house the new truck rental facilities of R. G. Mayberry, Pittsburgh, Pa.

According to Mr. Mayberry, the combination of steel structure and concrete block foundation walls provides operating advantages as well as economy in cost. "A building of this kind can be erected," Mr. Mayberry reported, "for at least 40 percent less cost than one of solid masonry or other types of standard construction. The big savings are in reduced labor and in the steel roof, which costs much less than the conventional roof. Moreover," Mr. Mayberry said, "the steel structure can be quickly erected and placed in use—my own crew had the skeleton of this building up in two and one-half days."

The Blaw-Knox Company adapted its doors to the special height and headroom conditions but otherwise the structure is typical of its universal, fully insulated, all-steel buildings. Erection costs, on these buildings are reduced by pre-assembly into panels at the factory.

The building has a single span, with clear space to the eave throughout its 40-foot width and length of 104 feet. Arch type roof supports make possible this wide span and contribute to roof strength as well as to interior attractiveness. The roof sheeting is laid across large, faced-in channels, which give the effect of a beamed ceiling. The walls are formed of pre-assembled 8-foot panels, in heights up to 12 feet, and are framed on the inside by 3-inch channels.

Reduced labor and steel roof make for big savings

The treated insulating sheets, reported to have an insulating value 55 percent higher than that of an 8-inch concrete

(*Please turn to page 236*)

BILLINGS QUALITY Checks

1—**OPENINGS:** Clean, smooth, accurate to size, positive fit on bolts, nuts and cap screws.

2—**HEADS:** Face hand ground and polished. Sides hand ground to contour of design.

3—**HANDLES:** Edges rounded, smooth for comfortable grip.

4—**FINISH:** A copper base over the Billings *Vitalloy Steel; next, a nickel plate over the copper base; finally, a heavy chrome plate over the nickel. That's Billings finish—made to protect—made to last!

5—**DESIGN:** Designed to give the most in strength—perfect balance yet light weight—"Grab hold of one"!

6—**BILLINGS *VITALLOY STEEL:** Special alloy steel of Billings specifications—selected and laboratory tested for its strength and fatigue resistance.

7—**MARKINGS:** Wrench numbers and sizes clearly marked—can be read at a glance.

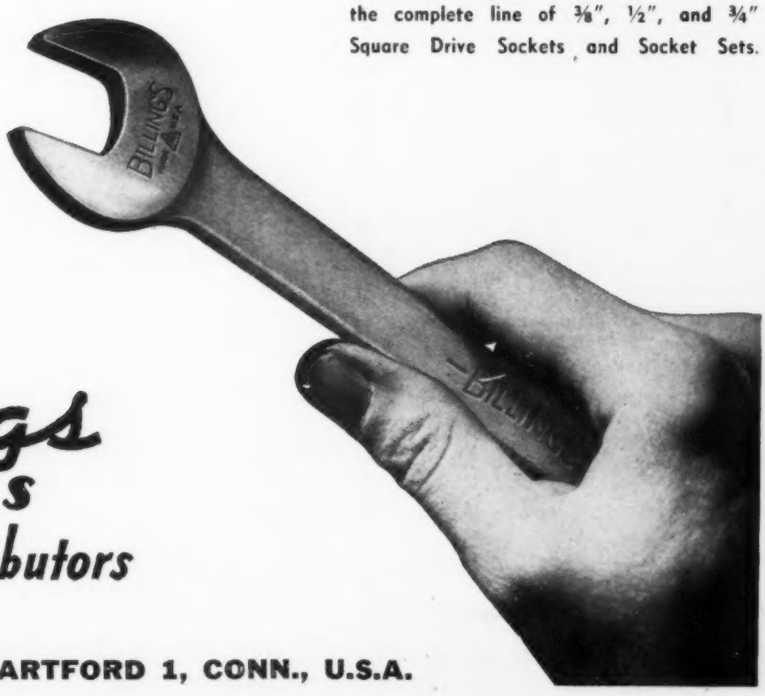
8—**DROP FORGED:** For strength to break loose the toughest nuts.

*Registered Trade Mark

WORKMEN LIKE 'EM because they fit better!

WRITE FOR CATALOG

describing Billings Wrenches in sets and the complete line of 3/8", 1/2", and 3/4" Square Drive Sockets and Socket Sets.



Buy **Billings WRENCHES** *From Industrial Distributors*

THE BILLINGS & SPENCER CO., HARTFORD 1, CONN., U.S.A.

FASTER CUTTING ...with Clipper Masonry Saws

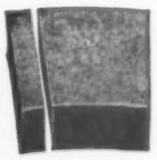
Your Special Size and Shape Brick or Concrete Block can now be "Tailor-Made" at a moment's notice!

The new Clipper Multiple Cutting Principle makes possible faster cutting of every masonry material regardless of hardness.

Here are a few typical examples of the speed and accuracy with which concrete products and fire brick can be cut.

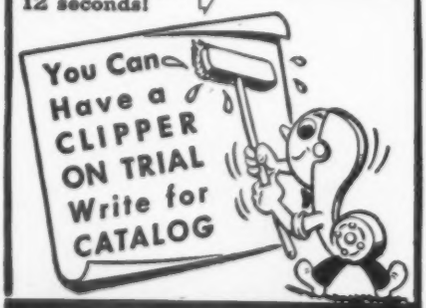
This concrete block, converted into a special size, was cut completely in two in 19 seconds.

One of the many intricate cuts performed on first quality clay brick for heat treating furnaces —made in 8 sec.



Rotary Kiln Blocks, cut to size for "key" bricks in rotary kilns, require only 10 sec. for completion of cut.

Basic refractories for steel furnaces or cement kilns must be accurately installed. This magnesite brick was cut in 12 seconds!



CLIPPER MFG. COMPANY
2804 Warwick, Kansas City 8, Mo.

(Continued from page 234)

block wall, are between the sheeting and the inner structural members. This method of insulation has eliminated condensation on the inside of the building and contributed to heating economy and summer comfort.

The sliding doors can be located on the eave or on the gabled end of the building and come in widths up to 16 feet. The widths of these universal buildings come in multiples or spans of 24 or 40 feet and the lengths in multiples of 8 feet for single-span buildings, or in multiples of 16 feet for multiple-span buildings. The largest pre-assembled section does not exceed 500 pounds in weight, a self-imposed limitation to facilitate shipping and erection.

HANDLING UNIT LOADS WITHOUT PALLETS

"Pul-Pac" is a combination of a push-pull attachment for Clark fork lift trucks, with a flat steel plate instead of conventional forks, combined with an inexpensive load base of paper or other material in place of wood or metal pallets, to receive, lift and carry unit loads.

Clark's "Pul-Pac" attachment

A hydraulically actuated gripper device moves forward, clamps an extending margin of the carrier sheet and pulls sheet and load onto the plate. The load is lifted and registered over the area on which it is to be deposited. The pusher device, working against the load, deposits the carrier sheet and its cargo in the desired position, as the backing truck withdraws the carrier plate.

Descriptive literature on the "Pul-Pac" may be obtained from Clark Tructractor, division of Clark Equipment Co., Battle Creek, Mich.

CEMENTED CARBIDE PUNCHES AND DIES INCREASE DIE LIFE

Use of Carboloy cemented carbide punches and dies for punching holes in small steel hinges is reported to have increased die life more than 40 times at Underwood Corporation, Bridgeport, Conn.

Two solid Carboloy cylinders and two Carboloy bushings are used in making up a punch and die set. The carbide cylinders are mounted in hardened steel punch bodies and fastened into the upper die block. The carbide bushings are

(Please turn to page 238)

HOSE FOR USE IN ANY INDUSTRY!

LIGHT, STRONG, FLEXIBLE

FLEXAUST

SPIRAL-REINFORCED HOSE

Flexaust is suitable for a wide variety of suction and pressure uses in ventilation, dust collection and fume control. **SIZES 1¼ inches to 24 inches.** Write for full information on this all-purpose hose. Various Flexaust types, accessories, and other hose types also available:

BLOFLEX
Non-reinforced collapsible

PORTOVENT
Ring-reinforced retractable

AMERICAN VENTILATING HOSE CO.
Dept. A-6, 15 Park Row, New York 7, N. Y.
Branch Offices: New Orleans, La., San Francisco, Calif., Washington, D. C.
Plants: Amesbury, Mass. • Seattle, Wash.

Storage or Wardrobe
CABINETS
72" x 34" x 18". Style 4ST shown, with 4 adjustable shelves. Also available, Wardrobe Type, Style 1WA, and Combination Wardrobe and Storage, Style 3CW.
$42.95

Now Available!
LOCKERS
12"x18"x78"
Single Tier.
3 or more wide.

$15.50 each.

Desk-High
CABINETS $19.95
Maximum working and storage space, using minimum floor space! 29½" high, 24" wide, 18" deep.

NEW ALL-STEEL EQUIPMENT
Delivered at low Manufacturer's Prices! Heavy construction, baked olive green enamel finish. Yale locks and keys. All prices FOB Plant.

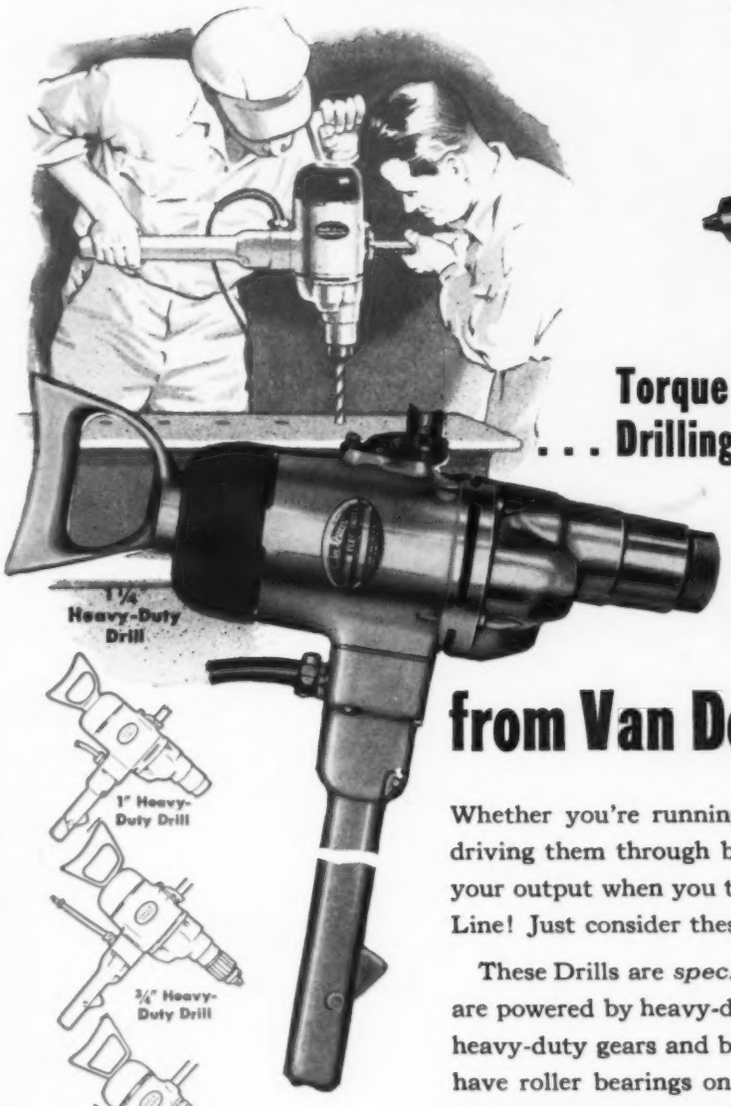
Stanstee

IMMEDIATE DELIVERY

STANDARD STEEL EQUIPMENT COMPANY, INC.
Mfgrs. of Cabinets, Lockers & Shelving
Dept. P, College Pt., L. I., N. Y.

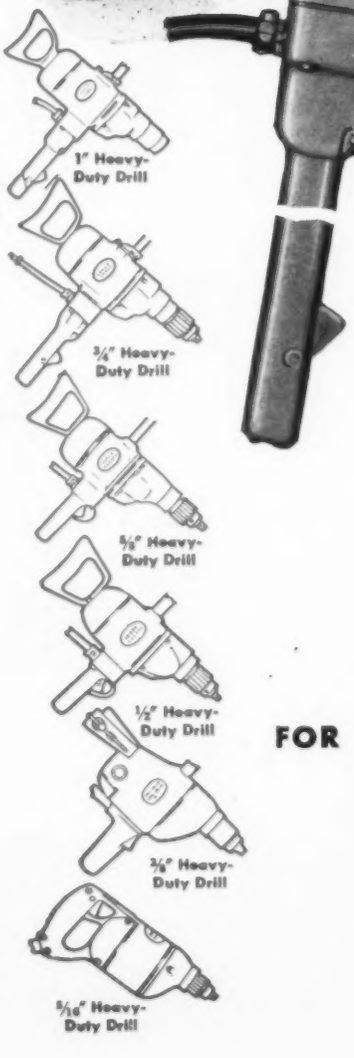
Stamina for Production Drilling . . .

¼" Heavy-Duty Drill



Torque for Heavy . . . Drilling and Reaming

1¼" Heavy-Duty Drill



1" Heavy-Duty Drill

¾" Heavy-Duty Drill

⅝" Heavy-Duty Drill

½" Heavy-Duty Drill

⅜" Heavy-Duty Drill

5/16" Heavy-Duty Drill

You Get BOTH from Van Dorn Heavy-Duty Drills!

Whether you're running drills hour after hour in production . . . or driving them through big girders and heavy timbers . . . you step up your output when you tool up with the Van Dorn *Heavy-Duty* Drill Line! Just consider these *facts:*

These Drills are *specifically* built for the toughest kind of use. They are powered by heavy-duty Van Dorn motors. They are equipped with heavy-duty gears and ball bearings throughout. And the larger models have roller bearings on their chuck spindles to transmit torque and withstand severe thrust.

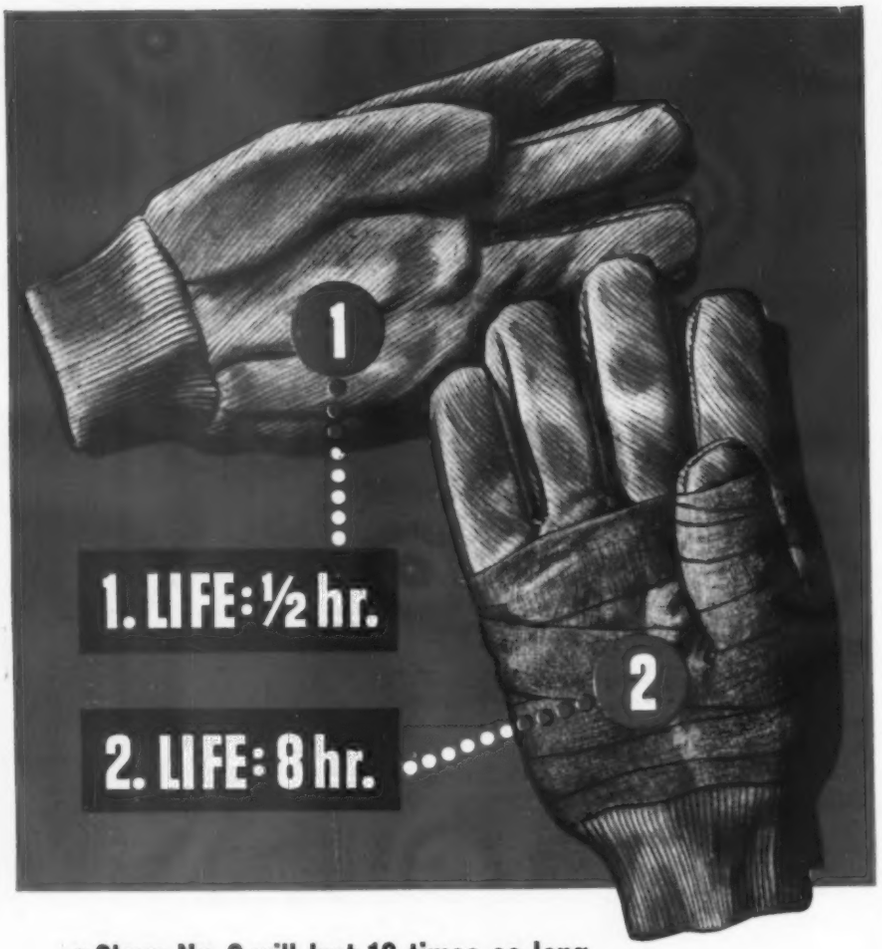
You have eight Van Dorn *Heavy-Duty* Drills from which to choose, in capacities from ¼" to 1¼" to fit your specific needs. Ask your nearby Van Dorn Distributor for full details on these powerful Drills today. Write for your free copy of our catalog to: The Van Dorn Electric Tool Co., 764 Joppa Road, Towson 4, Maryland.

FOR POWER SPECIFY

"Van Dorn"

(DIV. OF BLACK & DECKER MFG. CO.)

PORTABLE ELECTRIC TOOLS



• Glove No. 2 will last 16 times as long on a grueling job because it has extra protection

That's what a Chicago die casting firm discovered when it called in a Bauer & Black Technical Consultant for help. Gloves used in handling rough castings were wearing out in half an hour! The Consultant recommended wrapping them with Industrial Adhesive Tape No. 133.

On trial, the wrapped gloves lasted 8 hours! On other jobs, glove life was extended from two to thirty days. What's more, the workmen's hands were spared, production was speeded and savings mounted.

HOW CAN TAPE SERVE YOU?

If you have a "protection" problem—or a packaging, weatherproofing, insulating, or bundling problem—it's a good bet a Technical Consultant can help you iron it out, free! Industrial Adhesive Tape serves so *many* uses, and hundreds of industries have benefited by this free service. To have him call, write Dept. 97 today—and don't forget to ask for our free monthly Automotive News Letter; you'll enjoy it.

Products of

BAUER & BLACK

Division of The Kendall Company, 2500 S. Dearborn St., Chicago 16

Industrial Adhesive Tape

PRESSURE SENSITIVE

Production Short Cuts to Reduce Costs • Research to Speed and Improve Methods

(Continued from page 236)

mounted in the lower die block. Two steel pins are installed to line up the die blocks before the carbide punches contact the work on each stroke. This prevents the punch from hitting the die.

Since the installation of the carbide punches and dies in this instance more than 1,000,000 hinges have been punched, at which stage, the report states, the Carboloy punches and dies have shown no appreciable signs of wear, indicating a greatly increased life advantage.

AUTOMOTIVE SERVICE KITS OFFERED BY WAA

Automotive service kits, each assembled from government owned surplus equipment costing $323.25 are being offered for sales to all buyers in single kit units for only $78.50 under a new War Assets Administration program.

The offering affords truck and bus fleet operators, well drillers, construction contractors, farmers and other truck and bus owners an opportunity to buy essential repair equipment at a saving.

Each kit includes the following equipment:

(1) A portable grease dispenser, which is operated by a gasoline engine so that it can be set up in any location. It is equipped with two 30-pound capacity tanks. A 16-inch wheel and handles make it easy to operate and move.

(2) A hydraulic tire spreader for use on tires of all sizes including heavy duty truck and bus tires. It is equipped with a two-ton hydraulic jack and is substantially made of electrically-welded steel parts.

(3) A truck tire vulcanizer that can be carried in a tool box and mounted for use on a work bench, running board or fender. It is equipped with a large clamp for emergency use on heavy duty vehicles.

(4) A tire chain tool designed to open and close all sizes of cross-chain hooks from the passenger car type to the truck type.

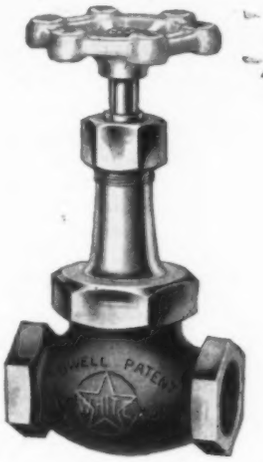
Equipment included in the offering has been offered previously to priority claimants at fixed prices and in substantial lots through competitive bid sales. Grouping these four essential repair and maintenance items in kits and permitting purchase of a single kit are expected to make them attractive to actual users of the equipment as well as jobbers.

All orders should be sent to WAA, Lordstown Sales Office, Warren, Ohio, where the entire inventory is located.

INDUSTRIAL EXPOSITION TO BE HELD IN AUGUST

The fourth annual Southern California Industrial Exposition will be held in the Pan-Pacific Auditorium, Los Angeles, August 16-24. Industrial exhibits from every field will be displayed to visiting buyers, engineers and exporters. A widespread publicity campaign is being conducted throughout the continent to advertise the event.

They may look alike, but... one is a winner..another an "also-ran"



200-pound Bronze Globe Valve with screwed ends, union bonnet and regrindable, renewable, wear-resisting "Powellium" nickel-bronze seat and disc.

200-pound Bronze Regrinding Horizontal Swing Check Valve. Has screwed ends, screwed-on cap and regrindable, renewable bronze disc.

Call it "heart", "staying power", or what you will, some thoroughbreds have what it takes to win.

Now let's consider valves!

Compare the outward appearance of any Powell valve with that of other valves of the same type and size. You'll probably see very little difference. *It's the things you don't see that give Powell valves the "staying power" that makes them winners.*

There's nothing mysterious about these things. They're merely the result of the continual progress in design, knowledge of materials, and quality of workmanship that comes from more than a century of making valves—and valves only—for American industry.

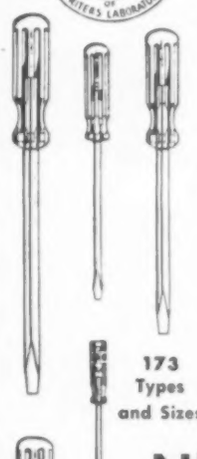
150-pound Iron Body Bronze Mounted "Irenew" Globe Valve. Has screwed ends, union bonnet and regrindable, renewable, wear-resisting "Powellium" nickel-bronze seat and disc.

125-pound Bronze Gate Valve with screwed ends, inside screw rising stem, screwed in bonnet and either taper wedge solid or double disc.

The Wm. Powell Company
Cincinnati 22, Ohio
DISTRIBUTORS AND STOCKS IN ALL PRINCIPAL CITIES

POWELL VALVES

SAFETY *has been added to* SERVICE *in the New* VACO *line.*



● Management interested in reducing fire hazards as well as in benefiting from the low long term cost of quality tools has found it profitable to investigate the new Vaco screw and nut drivers.

These precision built tools, made only with chrome vanadium bits, are equipped with Vaco Amberyl slo-burning handles . . . shock-proof, break-proof and the only handles of their kind carrying the Underwriters' Laboratories, Inc. Re-examination Service Marker. For full information, write to: Vaco Products Company, 317 E. Ontario St., Chicago.

173 Types and Sizes

VACO PRODUCTS CO.

NEW . . . the Vaco Reversible!

Pull out the blade, turn it around, and the new Vaco Reversible becomes a Phillips instead of a regular screw driver. Saves *both* time and money!

Booklet Tells How to Use

Cellusuede

FLOCK

An interesting and colorful booklet on their product has been prepared for your information and convenience by the makers of Cellusuede Cotton and Rayon Flock. Brief, clear explanations give all the facts you'll want to know about this versatile coating material; what it is made of; how it is applied; how it can be used. In the pages of this booklet you may find the answer to one of your manufacturing problems. You will be interested, too, in the colorful and unique application of Cellusuede on the booklet cover. Write for your copy.

CP Cellusuede Products, Inc. ROCKFORD, ILLINOIS

COLOR ANODIZING OF ALUMINUM DIE-CASTINGS

Aluminum die-castings, especially those containing substantial amounts of silicon, have been difficult to anodize and color. It is now possible to accomplish this integral coloring of these light metal castings by the use of special anodizing solutions, equipment and techniques, according to the Technical Processes Division of Colonial Alloys Company, Philadelphia 29, Pa.

The colors produced are lustrous, bright but not as vivid as those produced in the color-anodizing of wrought aluminum. The surfaces have a beauty and brilliance of their own, which is characterized by a glazed china effect for the high silicon type alloys; and smooth solid deep colors for many of the silicon free types of alloys.

A long range of colors is possible including red, blue, green, yellow, black, gray, clear, etc. Best results are obtained when the castings are polished and buffed to a mirror finish before color-anodizing.

Where the casting has surface defects, as caused by "cold shots" or other conditions common to die-casting, these imperfections will be evident in the finished article.

Beside the beautiful effects created by this method of color-anodizing, the casting receives, at one and the same time, other benefits. These benefits include high corrosion resistance (250 hr. minimum salt spray test) in accordance with Government Specification ANQQA696a. Others are abrasion resistance, electrical insulation value and an excellent base for paint, if desired.

Anodized aluminum coatings, unlike platings, are part of the base metal and are not subject to peeling (lifting), blistering or crazing. High temperatures have little or no effect. Aluminum itself would melt long before an oxide (anodized) coat (melting point 3722°F.)

To some extent, the color in the coat might, however, be affected by high temperatures. No changes occur in the lowest temperatures.

1 1 1

NEW ROOM-TEMPERATURE ASSEMBLY GLUE

A new resin adhesive known as Durez 13793 for assembly or secondary gluing which sets at room temperature and has a one-hour assembly time is announced by Durez Plastics & Chemicals, Inc., of North Tonawanda, New York. This adhesive is used for gluing hard or soft wood, sheet asbestos, foamed glass, phenolic laminates, vulcanized fibre, etc.

This resorcinol type adhesive is said to meet all specifications such as 52G12 (Bureau of Ships) G-33 (Navy Bureau of Aeronautics) 14124 (Army Air Forces) C-28-76 and C-27-484 (Royal Canadian Air Force) which require a durable, boil-proof adhesive that sets at temperatures of 70° F. or higher.

Durez 13793 is a water soluble liquid resin which has more than six months

(*Please turn to page* 242)

for stronger, safer assembly...

use CLEVELAND FASTENERS

made by DOUBLE EXTRUSION

Recommended for maximum strength

Cleveland
High Carbon
Heat Treated
Cap Screws

Double Extrusion—the manufacturing method applied to fastener production through the Kaufman Process—works the steel with less strain and distortion to grain structure; toughens surface sections while preserving the interior ductility. Heads will not shear or crack. Size and shape are held to remarkably close tolerances.

The most all around satisfactory fastener you can obtain is the Cleveland High Carbon Heat Treated Cap Screw—a dependable fastener of maximum strength and good appearance. Its black satin-like finish has rust-resisting qualities. It's more than worth the slight extra cost over 1020 bright screws. Write for catalog and prices.

ASK YOUR JOBBER FOR CLEVELAND FASTENERS

The Cleveland Cap Screw Company

2917 EAST 79TH STREET • CLEVELAND 4, OHIO

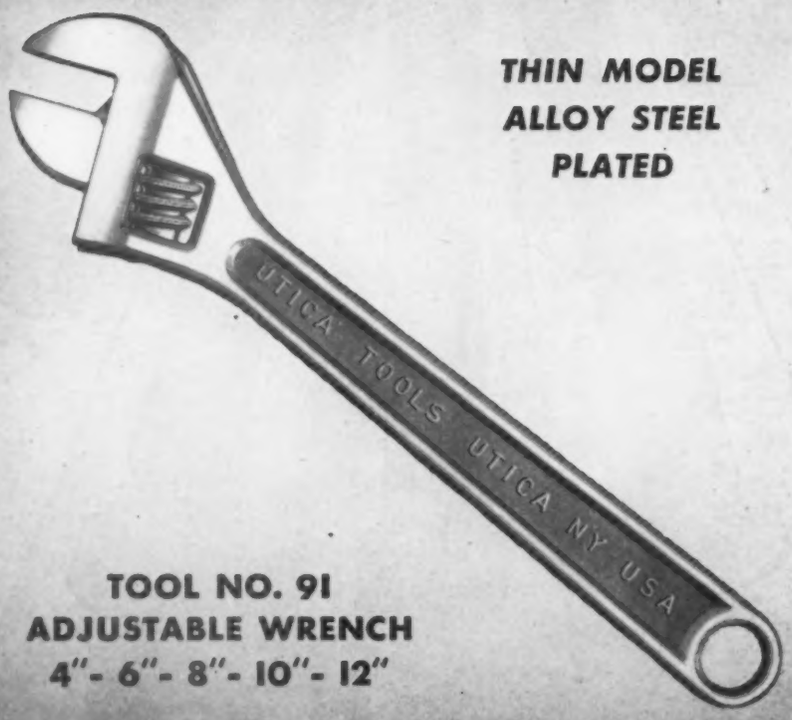
Warehouses: Chicago and Philadelphia

CLEVELAND *Top Quality* FASTENERS

MADE BY THE ORIGINATORS OF THE KAUFMAN PROCESS FOR GREATER STRENGTH AND ACCURACY

Utica Tools
FOR MORE TOOL MILEAGE

UTICA Adjustable Wrenches are noted for their time-saving precision and longer wear . . . *more tool mileage.* That is why they are in constant demand by good mechanics. Sold only through recognized jobbers.



THIN MODEL
ALLOY STEEL
PLATED

TOOL NO. 91
ADJUSTABLE WRENCH
4"- 6"- 8"- 10"- 12"

U TI CA
UTICA
DROP FORGE & TOOL
CORPORATION
UTICA 4, NEW YORK

(*Continued from page* 240)

storage life in sealed containers. It is used with a powdered hardener, Durez 12689, and will also carry extra filler and water without impairing its bonding qualities.

Where immediate application of pressure is not practical or desirable, the manufacturer states that tests indicate a maximum open assembly time of one-hour and closed assembly time of 2½ hours at 70° F., or three-quarters of an hour open assembly and 1¾ hours closed assembly at 90°. Maple block shear tests at these assembly times reveal at least 2800 psi.

ELECTRIC IMPACT TOOL

New universal electric, all purpose impact tool, using standard attachments, will apply and remove nuts, drill, ream, tap, drive and remove screws and studs, extract broken cap screws and studs, run wire brushes, do hole saw work,

Electric Impact Tool

drive wood augers, and drill brick and masonry. It is designated as the Size 4U. The tool weighs 6½ lbs., has an over-all length of 10½", a free speed of 2000 rpm, and delivers 1900 rotary impacts per minute under load. It is powered with reversible, universal, electric motor (3 amp.) that operates on 110 volt, a-c, d-c current. Patented mechanism converts the power of the motor into "rotary impacts" which exert powerful turning effect, minus kick or twist. The unit is rated to handle nuts and cap screws up to ⅜" thread size; reamers up to ½"; taps ¼" to ½"; drill ¼" in metal up to ½" by step drilling. Printed matter available. *Ingersoll Rand Co., 11 Broadway, New York, N. Y.*

G-E ISSUES 700 PAGE MANUAL ON ELECTRONIC RECEIVING TUBES

A new 700-page technical manual on electronic receiving tubes, for electronic equipment manufacturers and designers, has been made available by the Tube Division of General Electric Company's Electronics Department, Schenectady, N. Y.

The new manual, prepared with an expander-type binder, discusses the applications and performances of receiving tubes in the division's line and contains performance curves, ratings, outline drawings, basing diagrams and other extensive data. It is expected to be of value to

(*Please turn to page* 244)

THE STANDARD BY WHICH ALKALIES ARE JUDGED

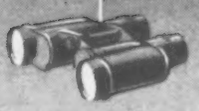
TRADE MARK REG. U.S. PAT. OFF.

SOLVAY

TRADE MARK REG. U. S. PAT. OFF.

PRODUCTS FOR THE PLASTICS INDUSTRY

Caustic Soda
Chlorine
Soda Ash
Caustic Potash
Monochlorobenzene

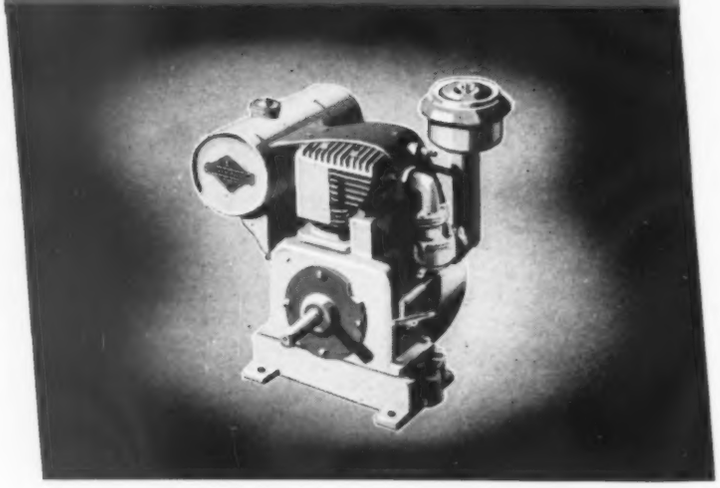


SOLVAY SALES CORPORATION *Alkalies and Chemical Products Manufactured by The Solvay Process Company* **40 Rector Street, New York 6, N. Y.**

THREE MILLION

BRIGGS & STRATTON ENGINES

A NEW PEAK IN GASOLINE POWER HISTORY



When the 3 MILLIONTH Briggs & Stratton engine came off our production lines recently, a series of new records was established for the entire industry. It is by far the greatest number of 4-cycle air-cooled engines ever built by one manufacturer. It is by far the longest period . . . more than 27 years . . . that any manufacturer has built 4-cycle air-cooled engines *continuously, without interruption.* Back of these engines Briggs & Stratton maintains the most extensive, worldwide network of *Authorized Service Stations* in the small engine field.

Preferred Power FOR INDUSTRIAL CONSTRUCTION RAILROAD AND FARM EQUIPMENT

BRIGGS & STRATTON CORPORATION
Milwaukee 1, Wisconsin, U. S. A.

AIR-COOLED 4 CYCLE BRIGGS & STRATTON GASOLINE ENGINES POWER

(*Continued from page 242*)

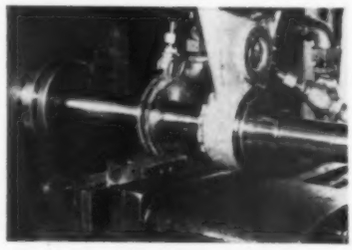
equipment manufacturers and designers, broadcast station engineers, users of aviation and other communications equipment, and radio repair centers.

Bound in a stiff leatherette cover, the handbook lists fundamental tube application principles and reviews many typical circuits. It sells for $5.00 which includes revision service through 1948. In 1949 further service to keep the manual up-to-date will be available at one dollar a year.

EFFICIENT USE MADE OF CARBOLOY-TIPPED CUTTER

Nelco Tool Co., manufacturers of Carboloy-tipped cutting tools, has reported an interesting and efficient use of its milling cutter by the I-T-E Circuit Breaker Co., Philadelphia, Pa.

The job requirement called for cutting a slot ½" deep, 5" long, .252 wide in a hard extruded copper terminal block. The operation was done on a Kearny & Trecker, 20 CSM milling machine, horizontal type. Spindle RPM was 1250. Previously, high-speed steel cutters had been used, with actual time required for operation 3.2 hours per 100 slots. The



Nelco's Milling Cutter

table feed was 5⅛" per minute. The steel cutters would not hold size due to the high amount of wear caused by the hard copper.

Using Nelco's Carboloy-tipped cutters, the actual time required for the operation, including loading and unloading, is now 1.4 hours per 100 slots. The table feed is 90" per minute. Additionally, 3200 slots are obtained before dulling or loss of size sets in. The cutters are used in gangs of 2 or 3, and the pieces are ganged in the fixture in the same manner.

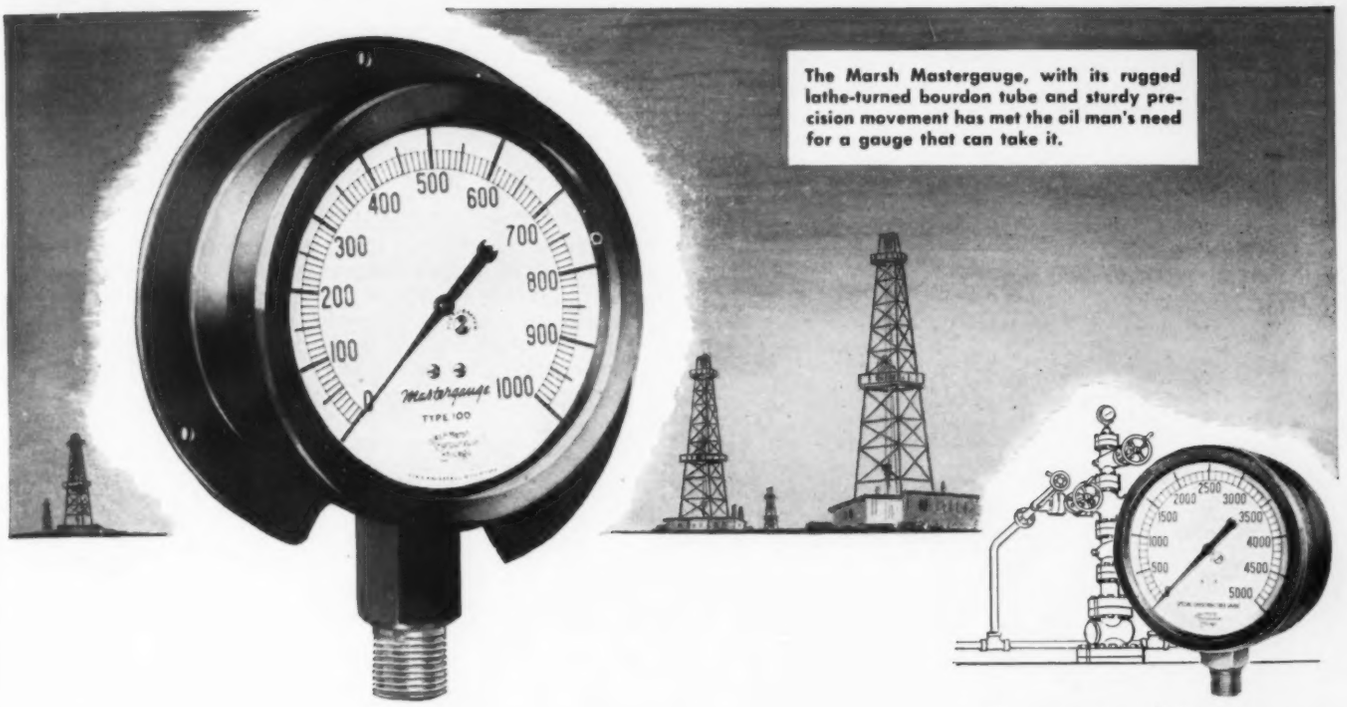
GASOLINE-RESISTANT WOOD FILLER

Since glycerine is immiscible with most organic solvents, it is included in a special filler for making wooden containers impervious to organic liquids, especially gasoline. According to T. M. Finley—in U. S. patent 2,410,654—wooden containers are given this property by hot-impregnation with a soap composition made from:

Lard	128	parts
Concentrated lye	24	"
Methyl alcohol	5	"
Glycerine	21	"
Gasoline	4	"

This is followed by carefully cleaning and painting the interior surfaces with three coats of flat synthetic enamel.

(*Please turn to page 246*)



The Marsh Mastergauge, with its rugged lathe-turned bourdon tube and sturdy precision movement has met the oil man's need for a gauge that can take it.

Oil men call these tree-like piping assemblies "Christmas trees." Marsh "Christmas Tree" Gauges are widely used for this service—some of them on the highest pressure oil well in the world.

Throughout the oil country

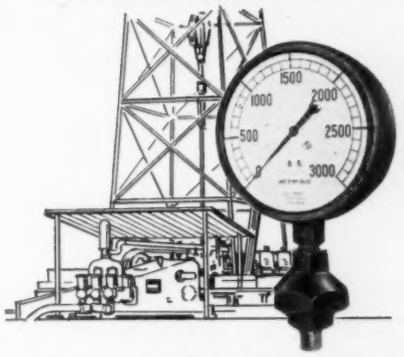
Marsh is the gauge!

When you run across a particularly tough problem of pressure measurement in any branch of industry, it's a pretty safe bet you'll find a Marsh Pressure Gauge in full charge of the situation. And there is no better place to see this than in the production phase of the petroleum industry.

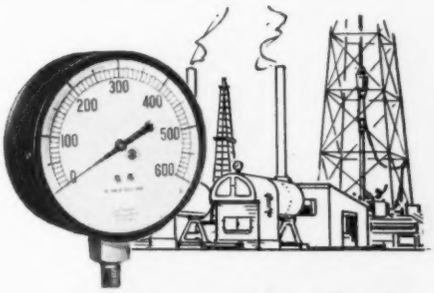
Out in the oil country you find every kind of punishment a pressure gauge can be asked to undergo. Sometimes it's extreme pressure; sometimes, extreme temperature; sometimes, racking vibration or relentless pulsation; often, all of these at once. In dealing with such conditions, oil men have become about the toughest critics of pressure gauges; so the preference they have shown for Marsh instruments is a remarkable tribute to Marsh accuracy and stamina.

Yes, Marsh is the oil country's own gauge—first choice of a great field where precision and ruggedness is a law unto itself. Yet this is only one example of the preference shown in many fields by men who know pressure gauges forward and backward.*

Keep this in mind when you select pressure gauges. Why accept less than the instruments preferred by the most critical of pressure gauge users?



The Marsh Mud Pump Gauge, popular in the oil country, is an excellent example of Marsh specialization.



Marsh is the gauge on the familiar oil country boilers.

JAS. P. MARSH CORPORATION, 2035 Southport Ave., Chicago 14, Illinois
Export Dept.: 155 E. 44th St., New York 17, N. Y.

Jas. P. Marsh products include: **A full line and range of gauges in pressure, vacuum compound, altitude, hydraulic, sprinkler, ammonia, ounce-graduated retard, test, and diaphragm types. Dial thermometers in rigid stem and remote reading types. A broad line of steam and hot water heating specialties. Ask for literature.**

MARSH GAUGES

Marsh alone has the "Recalibrator"
—quickest and best way to correct a gauge that has been knocked out of adjustment by improper handling.

"THE STANDARD OF ACCURACY"

*** One of a series of advertisements citing examples of this.**

NOW . . . it costs no more to **USE** the modern day **AMAZING**

INTEGRATED SOAPS

DEVELOPED BY

Lightfoot

MAKERS OF QUALITY SOAPS FOR OVER FORTY YEARS

A *triumph of Lightfoot laboratory research!* Scrubber and soap welded to form a single, integrated, indivisible unit . . . with each particle a complete cleanser in itself. *This exclusive Lightfoot process has already gained acceptance as the greatest advance, in cleansing efficiency and economy, of the last decade!*

Lightfoot TREET

A FINE GRIND SOAP FOR **HEAVY DUTY**

Most popular industrial soap made! Efficient, safe, economical — the perfect cleanser for general plant use . . . ideal for women workers.

Lightfoot COMMODORE

A COARSE GRIND SOAP FOR **EXTRA HEAVY DUTY**

Same formula as Lightfoot TREET but ground coarser for removing extra heavy incrustations of dirt, grime, grease, oil, etc.

Write for samples to

LIGHTFOOT SCHULTZ COMPANY

663 Fifth Avenue, New York 22
209 South State Street, Chicago 4

Fork-Lift-Truck and Pallet Operations Save Manpower, Time and Damage in Handling Walnut Crop

Savings in man-power; full utilization of cubic storage space; faster handling of shipments through receiving, storage and shipping areas; less breakage; more efficient cold storage; easier inventory control; freedom from traffic congestion; greater safety, and lower handling costs. These are among the many advantages gained by the California Walnut Growers' Association, Los Angeles, Calif., when it built a warehouse around the handling of palletized unit loads with storage-battery-powered industrial trucks.

The action of the association was based upon a thorough study of the flow of walnuts through the various warehousing operations. For some two-and-a-half months each year—from the beginning of October until about mid-December—the seasonal crop of walnuts flows steadily through the warehouse at the rate of some 50 carloads, or 1,750 tons, a day.

On the basis of the study it was decided that the use of modern, mechanized equipment capable of easily lifting, transporting and tiering heavy loads was necessary. Because walnuts, like many other foods, readily absorb objectionable odors, the handling equipment had to be of a kind that does not give off such odors. Also since a large part of the time the equipment would have to be used inside of refrigerated storage areas it had to be of a type that did not give off heat. After a study of all factors involved, the new warehouse was so planned it had all the advantages to be found in battery-powered trucks could be utilized.

Included in the factors was the necessity of providing for the economical expansion and contraction of cold storage facilities, because of the seasonal character of the business. During the rush season approximately 280,000 square feet of floor space is required for the temporary storage of the nuts. This requirement contracts some 60% to 110,000 square feet immediately following the rush season, and of this only 43,000 square feet of space is needed to provide permanent refrigeration.

A fleet of some nine, battery-powered, fork-lift trucks, each of 6,000 pounds capacity, is used in the warehouse. These are used first to unload incoming freight cars, then to transport to storage, and finally to move palletized unit loads of walnuts from storage into outward shipment. The palletized unit loads of walnuts, each consisting of twenty-five 100-pounds sacks, stacked in an interlocking fashion, are transported from the cars to designated, areas within the warehouse,

The walnuts are graded previous to shipment to the warehouse, and incoming shipments are noted on a location sheet, so that when a demand for nuts of a certain grade is received, it is a simple matter to dispatch a fork-lift truck to the correct area to pick up the load. This procedure has simplified inventory control.

In movement, two unit loads, of 50 sacks at a time, are moved by the fork-lift trucks. The loads are stacked two-high in warehousing, but in the rush season, when space is at a premium, it often is necessary to tier three-high. On an average each truck, in an eight-hour shift, moves some 4,000 sacks, or

(*Please turn to page* 249)

This truck handles 5,000 pound palletized unit loads of walnuts. With pallet system the sacks are handled individually only once.

for the lowest cleaning costs

ALLEGHENY METAL

SALES SERVICE based on RESEARCH and DEVELOPMENT

ALLEGHENY LUDLUM STEEL CORPORATION, PITTSBURGH 22, PA.

Pioneer in Specialloy Steels

CALL FOR AN ALLEGHENY LUDLUM ENGINEER

ALLEGHENY METAL is stocked by all JOS. T. RYERSON & SON, Inc., Warehouses

FACTS you need about CABLES you need

A check list of Okonite-engineered products . . . a chart to guide your cable selection

Use it as a catalog, as a guide, as a reference! Okonite's just-off-the-press bulletin OK-1036 gives you a complete listing of the principal Okonite and Hazard insulated wire and cable products . . . offers you in only eight pages an over-all picture of a comprehensive group of products based on a specialized insulation and cable making experience since 1878.

FACTS about OKOLITE-OKOPRENE — a multi-purpose cable design

Heat-resistant Okolite insulation is electrically stable, resists moisture and ozone. Bonded Okoprene sheath resists corrosion, resists oil and chemicals, is non-flammable. Described and illustrated in Bulletin OK-2009.

FACTS about "The Cable with the Asbestos Suit" — OKOBESTOS

Bulletin OK-2061 gives you full data on Okobestos, a cable specially built for hot locations and wherever corrosive fumes, chemicals, oils or solvents are found. It gives the layer-by-layer story of a mechanically strong cable, comprising felted asbestos, varnished cambric, more felted asbestos and asbestos braid impregnated with a black moisture-resisting compound to form a protective coating.

FACTS about TAPES for Better Splicing

Okonite offers a selection of highest quality splicing materials in addition to its electrical wires and cables. Bulletin OK-1007 shows you how to use Okonite and Manson Tapes to best advantage and tells why experienced electrical men and maintenance engineers specify these tapes for long life and lasting electrical qualities.

For all literature, address The Okonite Company, Passaic, N. J.

5198

OKONITE OKONITE SINCE 1878 **insulated wires and cables**

(*Continued from page 246*)

400,000 pounds of nuts. During the peak of the season a two-shift day is operated, with the nine fork-trucks handling some 56,000 sacks.

The flexibility of fork-lift truck and pallet operations not only provide an efficient, low-cost, method of handling the walnut crop at peak season, but the size of storage rooms can quickly be regulated to suit seasonal demands by moving demountable heat-insulated partitions.

Some 5,600,000 pounds of walnuts are unloaded and handled daily.

No direct comparison of costs with other handing methods can be computed or estimated because the warehouse was built around the system of handling palletized loads with battery-powered fork trucks. According to the association, however, some of the advantages of the unit load system of handling, as compared to hand trucking, are:

(1) A 15 percent saving of man-power in that the handling of a 25-bag, or 2,500-pound, pallet-load of walnuts, would require the services of at least two men over a considerable period of time, whereas the unit load, palletized, requires only one man and a fork truck, for quick, pickup, carrying, and tiering of a 50-bag, 5,000-pound load. This is standard practice.

(2) In shifting unit loads from point to point within the warehouse, the fork truck handles at least three times the number loads in a given time that could be moved with hand trucks. This is an important saving since about 30 percent of all warehouse trucking, especially in the rush season, consists of such point-to-point movement.

(3) Transport and tiering of loads is performed in one operation. One man with the fork-lift truck can pile, or unpile, more sacks of walnuts in a given time than a gang of manual workers.

(4) The congestion and delay that would result from the use of a large number of hand trucks during the peak season is avoided through the use of the fork-lift trucks and the continuous operations described.

(5) Because of the quickness of movement with the battery-powered trucks, drivers move from warm, outside platform, temperatures into refrigerated areas without having to change into warmer clothing as would otherwise be necessary.

(6) The complete absence of smoke and fumes, assures the same freedom from

(*Please turn to page 250*)

1872 1947

75 YEARS OF SERVING INDUSTRY

OUR 75th ANNIVERSARY

1947 marks an important milestone in the history of The Chicago Screw Company, identifying it as a veteran leader in its field.

During its 75 years of progress, The Chicago Screw Co. has compiled a vast store of knowledge and skill that makes its products a standard of perfection in the screw fastening industry.

Apace with this growth in craftsmanship has been the constant addition of machines and tools to keep every process in Chicago Screw production the most modern known.

Chicago "Safety Plus" Socket Screws always represent the highest standard of quality. Outstanding in strength, clean and true dimensionally, "Safety Plus" fastenings are ideal for modern production methods.

CHICAGO *"Safety Plus"* line includes:

- Socket Head Cap Screws
- Socket Set Screws
- Stripper Bolts
- Square Head Dog Point Set Screws
- Pipe Plugs
- Keys for "Safety Plus" Products

Complete line includes:

- Hexagon Head Cap Screws
- Square Head Cup Point Set Screws
- Headless Set Screws
- Fillister Head Cap Screws
- Flat Head Cap Screws
- Taper Pins
- Milled Studs
- Semi-Finished Hexagon Nuts
- Semi-Finished Hexagon Castellated Nuts

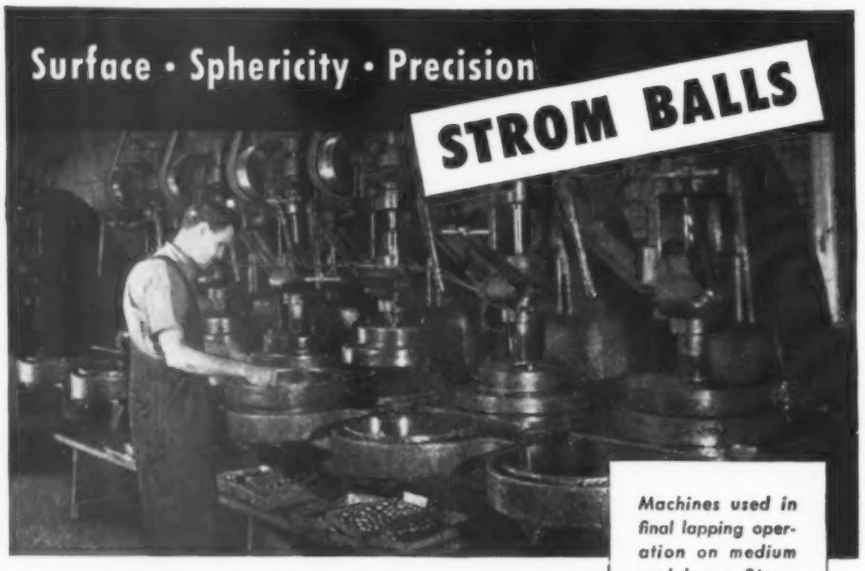
These Fine Products are sold only thru Authorized Distributors

THE CHICAGO SCREW CO.

ESTABLISHED 1872

1026 SO. HOMAN AVENUE CHICAGO 24, ILL.

Johnson Steel Spring Wire (XLO Music Wire) is available in a wide range of sizes from .003" (38,206 ft. to the lb.) up to .200" (9 ft. to the lb.). Produced with micrometer precision, this wire of a thousand uses — springs, wire forms, appliances. This quality product is available from Johnson sales offices.
JOHNSON
STEEL AND WIRE COMPANY, INC.
WORCESTER 1, MASS.
NEW YORK AKRON DETROIT CHICAGO LOS ANGELES TORONTO



It takes a long series of processes, developed and perfected over a period of years, to make a thing as faultless in material and form as a Strom Metal Ball. Worked to a tolerance of fifty millionths of an inch, their outstanding qualities of finish, sphericity and precision have made Strom Balls the standard of industry. Strom Steel Ball Co., 1850 So. 54th Ave., Cicero 50, Illinois.

Strom BALLS Serve Industry

Largest Independent and Exclusive Metal Ball Manufacturer

(*Continued from page 249*)

possible contamination of product in the refrigerated areas, as elsewhere.

(7) The amount of shell breakage is substantially reduced since the handling operations are held to a minimum, and the movement of unit loads with the fork trucks results in greater safety by the elimination of manual lifting, shifting and high-tiering operations.

BEARING INDUSTRY OFFERS STANDARD NUMBERING SYSTEM

A standardized numbering system for ball and roller bearing dimensions was presented recently to the American Standards Association by the Anti-Friction Bearing Manufacturers Association, 16 East 48th St., New York, N. Y.

The new code, presented by H. O. Smith, executive secretary of the Association, calls for a common means of identifying types, sizes, tolerances, modification of internal design and lubrication of standard ball and roller bearings to meet all the requirements of users This new identification system, he pointed out, utilizes a combination of figures and letters alternately and is flexible enough to take care of future changes in design, tolerances, lubricants and separator materials and is semi-descriptive rather than a dead code.

Mr. Smith pointed out that the industry's new numbering system permits the expression of more variable descriptions in terms of 4 digits, whereas the Army-Navy numbering system, which grew out of the war, is not only less flexible but must resort to the use of 12 digits since its system is basically a numerical one. In other words, the manufacturers of ball and roller bearings are able to convey all required information to bearing users in a much shorter and simpler form of standard identification. To the manufacturer this is of particular importance since in many types of bearings in the small size range it is sometimes impossible to stamp either the bearing or the package itself with an identification code which numerically runs into as much as 12 digits.

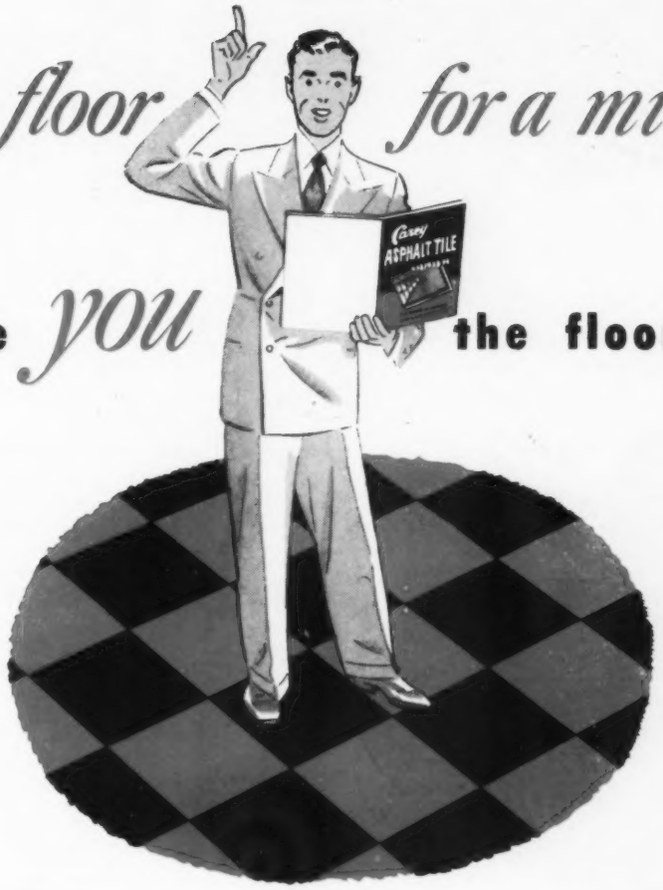
In a bearing designation such as the code 25BC02, it was explained that the 25 indicates that the inside diameter of the bearing is 25 mm.; BC is a code designation for single row radial non-loading groove assembly; and, finally, 02 indicates the series of the bearing and its outside diameter and width. Wherever more specific information is required such as seals, cages and lubricants, code letters and numerals are added. Under the Army-Navy system the 25BC02 bearing would be identified as 111X02502.

Mr. Smith revealed that the industry's new numbering system was used in its ball and roller bearing specification manual published in October, 1942, and was adopted by the Society of Automotive Engineers for inclusion in the SAE handbook first issued in 1943.

In presenting the industry's proposal to the American Standards Association, he pointed out that during the period of

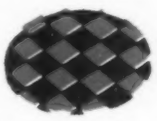
(*Please turn to page 252*)

we take the floor for a minute



to give *you* the floor for years!

it's Carey asphalt tile flooring



If you're looking for an attractive, durable, long-wearing flooring you'll be time and money ahead to read this: Carey Asphalt Tile provides versatile, low-cost flooring to meet a wide range of requirements under greatly varying conditions. From offices to residences . . . from restaurants to retail stores—that's the scope of installations where these advantages pay off for users:

IT'S LONG WEARING—High quality asphalt, selected mineral fillers and asbestos fibres form this tough, durable flooring that wears for years and years.

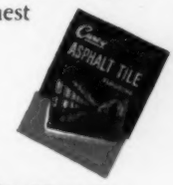
IT'S RESILIENT—The smooth surface has sufficient "give" to cushion loads—makes for greater comfort, less traffic noise.

IT'S FIRE RESISTANT—Carey Asphalt Tile is highly fire-resistant . . . also electrical and chemical resistant.

IT'S DAMPPROOF . . . VERMINPROOF . . . DUSTPROOF — Non-absorbent qualities give excellent protection against dampness . . . this flooring is also vermin and termite-proof . . . the smooth surface does not "powder" under traffic, is easily cleaned.

COLORS . . . SIZES—Carey Asphalt Tile is available in black and red . . . in two thicknesses, ¼" and ½" . . . and in two sizes, 12"x12" and 12"x24". Industro-Tile, for extra heavy duty, comes in ½" thickness, black only.

WRITE FOR THIS FREE FOLDER—All the information you'll want to help settle your next decision on flooring is contained in this helpful folder. Whether you have a flooring installation coming up for consideration now or six months from now, you'll save time and trouble by writing for your free copy *today*. Address your request to Dept. P-7.



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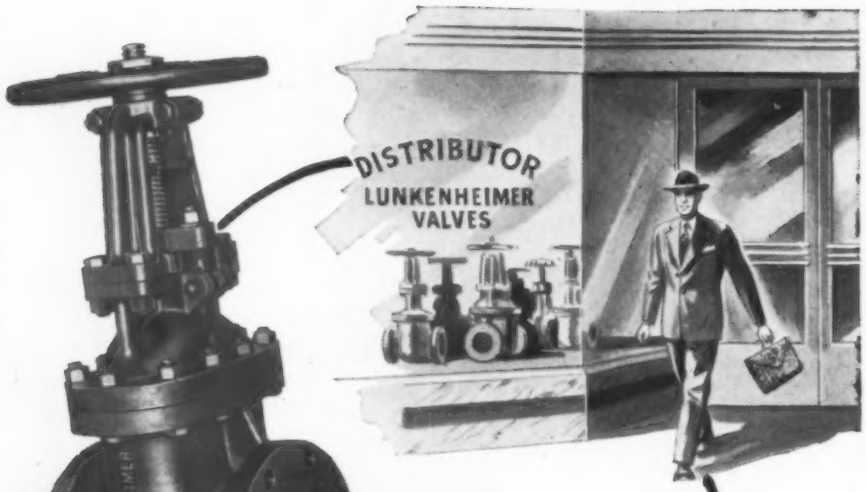

Fig. 1430
Iron Body Gate

YOU CAN'T BEAT this VALVE SERVICE

Speeded-up production has taken its toll of plant equipment. Break-downs and unexpected failures are more numerous.

A thorough check-up now will pay dividends. And don't overlook your steam, water, and air lines. A sudden valve failure might mean loss of valuable power and production.

But should valve trouble occur, you can get help . . . quickly . . . from your near-by Lunkenheimer Distributor. Long established in the community, he has thoroughly experienced personnel and adequate stocks . . . all the facilities and "know-how" for solving your valve problems.

Whether it's an emergency call, routine repair and maintenance service, or a new installation, phone your Lunkenheimer Distributor for fast, dependable service.

Engineering Service

Complete Stock Room Facilities

Aid in Solving Operating and Maintenance Problems

Direct Delivery Service

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NEW YORK 13 CHICAGO 6
BOSTON 10 PHILADELPHIA 34
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK 13, N. Y.

LUNKENHEIMER VALVES
BRONZE, IRON, STEEL, AND CORROSION RESISTANT ALLOY VALVES
AIR DEVICES, LUBRICATORS, AIRCRAFT FITTINGS

(*Continued from page* 250)

transition from the use of individual manufacturers' identification codes to adoption of the industry's standard coding, it will be necessary for both codes to appear on individual catalogues and packages until time and familiarity permit an industry-wide usage of the new numbering system.

* * *

FREE MACHINE TOOLS FOR GOVERNMENT AND NON-PROFIT ORGANIZATIONS

The War Assets Administration recently moved to give away huge quantities of surplus machine tools to government institutions and non-profit organizations.

Any machine tool will be made available for donation if it remains in inventory after being offered at a fixed price to priority claimants and commercial buyers. Eligible donees include agencies or institutions supported by the Federal government or by any state or local government and non-profit educational, health or charitable institutions.

This is the first time large scale donations of any kind will be made by the War Assets Administration, and the first time states and local governments will be the beneficiaries, WAA officials said. An intensive study of the needs of schools, institutions, and governmental bodies was made before embarking on this program. National purchasing groups were invited to Washington for consultation and for their recommendations. The donations program is the first major action taken as a result of these meetings.

As of March 31, approximately $769,000,000 worth of machine tools still remained in surplus inventory. These tools will be offered for sale at fixed prices and at prices determined by the Clayton Formula. No machine tool will be offered for sale at competitive bid before it has been made available for donation.

Prospective donees should submit their requests in writing to the Priority Claimants Division in WAA regional offices. The request should contain the following certification:

"It is hereby certified that the claimant is an agency or institution supported by the Federal, state or local government, or is a non-profit educational or charitable institution, organization, or association which has been held exempt from taxation under Section 101 (6) of the Internal Revenue Code: that the machine tools requested will be used to fill a present or anticipated need; that the property obtained hereby will not be disposed of without the concurrence of War Assets Administration or its successor, except by donation to an eligible donee hereunder."

Each customer service center will maintain information on machinery available for donation. Tools will be held for donation purposes for 30 days following the close of a fixed price sale. Requests for donation may be placed at any time prior to the expiration of the 30-day period established for donation activity.

(*Please turn to page* 254)

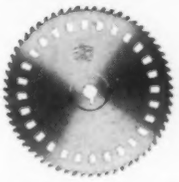
How the DISSTONEER is Helping Industry Solve its Cutting Tool Problems

Hundreds of manufacturers have learned that the quickest and most direct way to a solution of their cutting tool problems is consultation with a Disstoneer*. Often, simply by changing a single cutting tool he has helped to speed up production, improve workmanship, cut operating costs and greatly increase tool life. His services are available to you without charge or obligation.

A FEW OF THE MANY DISSTON CUTTING TOOLS THAT ARE EFFECTING IMPORTANT ECONOMIES

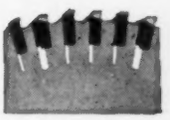
DISSTON SOLID-TOOTH METAL-CUTTING CIRCULAR SAWS

For cutting ferrous, and non-ferrous metals and other materials.



DISSTON INSERTED TOOTH METAL-CUTTING CIRCULAR SAWS

High speed steel teeth inserted in tough Disston alloy steel plate. Teeth easily replaced. Made in three patterns for every metal-cutting job.



DISSTON METAL-CUTTING BAND SAWS

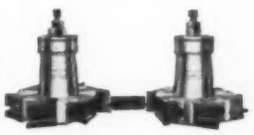
Two types: (1) Hardened Throughout, for cutting non-ferrous metals, plastics, etc., at speeds up to 5000 f.p.m., and friction cutting of ferrous metals at 12,000 f.p.m. (2) Hard Edge Flexible Back for low speeds which is packed in handy Disston Safety Reel.

DISSTON DI-MOL MOLYBDENUM HIGH SPEED STEEL HACK SAW BLADES

For cutting tool and machine steels, cast iron tubing, and for general machine shop production.

DISSTON PHILBRICK CUTTER HEADS AND KNIVES

One pair of heads permits many pattern changes in cutting flooring, shiplap and many other shapes.



DISSTON BITE-RITE FILES

Teeth are extra strong and sharp, and staggered for straighter, faster and smoother cutting. In all standard cuts, shapes and sizes . . . and for all materials.

DISSTON CARBOLOY FILING TOOL

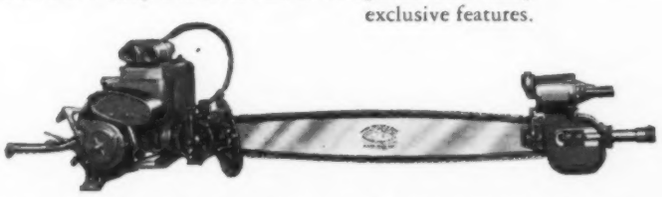
For lathe-filing of case-hardened steel, brass and bronze. Speeds work and leaves a finish as fine as that made by emery cloth.

DISSTON CARBOLOY-FITTED KNIVES

For surfacing hard woods and woods of an abrasive nature. Ground, lapped and accurately balanced in sets.

DISSTON CHAIN SAW with Mercury Gasoline Engine

Cuts costs and speeds up felling, bucking and the cutting of large timbers. A sturdily built, light weight, two-man saw that is easy and economical to operate. Has many exclusive features.



DISSTON BUTTRESS TOOTH HARD EDGE, FLEXIBLE-BACK SAWS

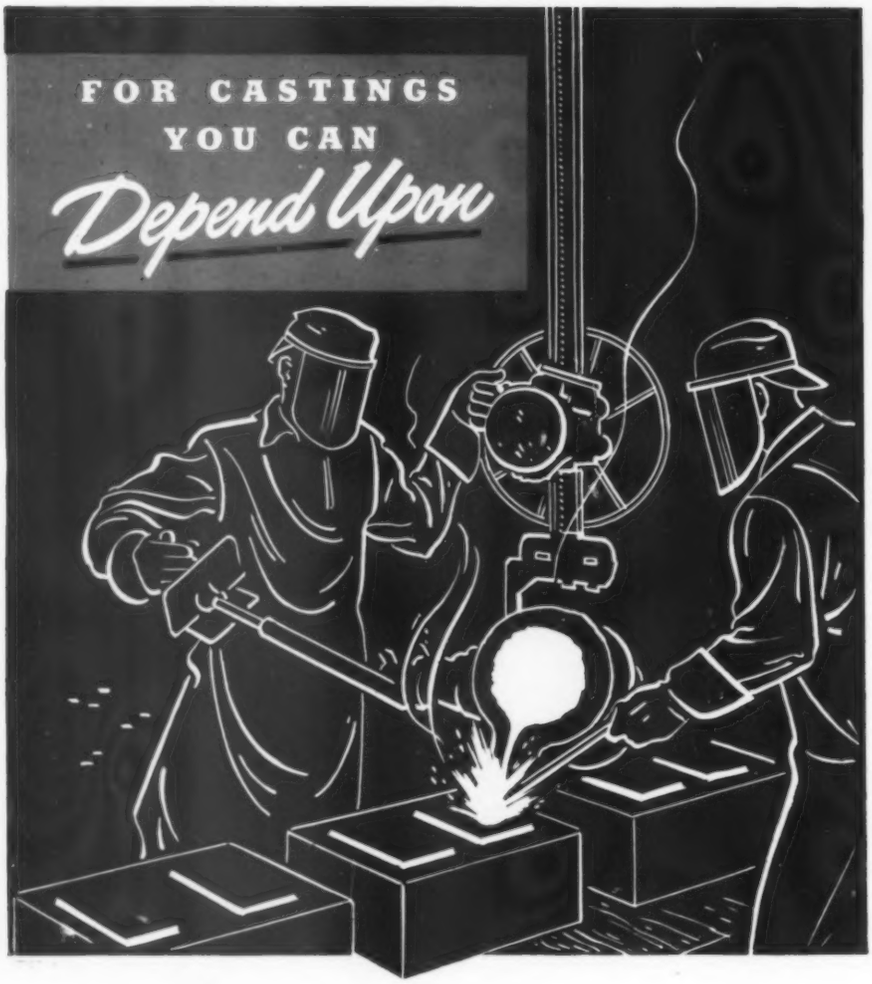
Wide tooth spacing permits faster feed. For magnesium, aluminum, corrugated board, dry ice, etc.

WRITE FOR FURTHER PARTICULARS regarding any of the above or other Disston Tools. There is a Disston Tool for every cutting operation . . . hand or machine.

ESTABLISHED 1840 REG. U.S. PAT. OFF.

***DISSTONEER**—a man who combines the experience of Disston leadership and sound engineering knowledge, to find the *right tool* for you—to cut wood, to cut metal and other materials—and TO CUT YOUR COST OF PRODUCTION—*not only on special work but on ordinary jobs as well.*

HENRY DISSTON & SONS, INC., 733 Tacony, Philadelphia 35, Pa., U.S.A.



Always call SUPERIOR

Superior's method of continuous "quality-control" is your assurance of gray iron, alloy iron and *electric furnace iron* castings which meet the requirements of the most exacting specifications. Offering consistent uniformity of grain structure and cross section density, Superior castings may be milled, drilled, turned and otherwise machined easily and economically. That's why it *always pays to call Superior.*

- **METALLURGICAL CONTROL**
  Closest control of the melt, assures highest quality of finished product.
- **MACHINABILITY**
  No hard spots to dull tools; uniform grain structure assures easy machining.
- **ACCURACY TO SPECIFICATIONS**
  Superior experience and "know-how" assure uniform castings accuracy.
- **CLEAN SURFACE**
  Superior castings have clean, smooth surface.

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SUPERIOR **MIchigan 3078**

PURCHASING SPECIFICATIONS ON INSULATION ISSUED BY GOVT.

Federal Specifications HH-1-564 has been issued by the government for use by the Army, Navy, Maritime Commission and other governmental bureaus, in the buying of block and board forms of mineral wool insulation for heated surfaces. In the belief that this should also prove helpful to private purchasers, copies of this specification are available from the Superintendent of Documents in Washington, D. C., at a price of 5 cents a copy.

The new specifications define as block insulation those rigid shapes which do not exceed 12″ by 36″, and as board those which are supplied in sizes larger than 12″ by 36″. Four classes of mineral wool compacts are set up by temperature range: for surfaces up to 225°F., up to 500°F., up to 1000°F. and up to 1500°F. Breaking strengths must exceed 8 lbs per inch of thickness; linear shrinkage (after six hours at the rated maximum temperature) shall not exceed 2%; water absorption (after 96 hours at 95% relative humidity and 120°F.) shall not be greater than 2% by weight, dimensions must be as represented within ¼ in. (⅛″ in thickness); density shall not exceed 20 lb. per cu ft for 500°F. material nor 25 lb per cu ft for the three higher temperature materials; and maximum allowable thermal conductivities in Btu inches per hr per sq ft per degree F. shall be as follows for the indicated mean temperatures: 0.35 at 100°F., 0.55 at 300°F., 0.67 at 550°F., and 0.80 at 800°F.

The Industrial Mineral Wood Institute, which worked with the U. S. Director of Procurement in promulgating the specification, has pointed out that the specifications are minimum specifications only and are well exceeded by present day mineral wool insulation producers.

Additional specifications for (1) fire-retarding qualities, (2) non-corrosive qualities in contact with steel plates and (3) bacteria and mold resistance under humid conditions, are given for maritime uses.

* * *

MACHINE TOOLS FOR GOVERNMENT AGENCIES

General Robert M. Littlejohn, Administrator of the War Assets Administration, was recently congratulated "for a vital change in policy that will benefit all levels of government throughout the United States" in a statement issued by Albert Pleydell, President of the National Institute of Governmental Purchasing.

An order issued by General Littlejohn, providing for donation of machine tools from federal surplus to state and local governmental and educational agencies, was hailed by President Pleydell as a first step in recognizing the needs of governmental agencies. "General Littlejohn's action is in direct line with recommendations made to him by the NIGP Surplus Property Advisory Committee in March," Mr. Pleydell said.

(Please turn to page 256)

IT'S HERE

Airco's new... improved line

stainless steel electrodes

for welding chromium-nickel

and chromium steels

All these NEW Airco Stainless Steel electrodes are furnished with a heavy extruded lime type coating for D.C. application. In addition, all but the straight chrome analyses are obtainable with a lime-titania type coating which is usable on A.C. or D.C. The slag produced by either of these coatings is easily removed.

Electrodes with the lime-titania (A.C.-D.C.) coating offer many desirable features not found in the lime coated electrodes. Why? Because when used on A.C., arc blow is eliminated, which, in turn, results in easier manipulation, more uniform arc action, and better appearance of deposit. This class of electrodes can be recommended for all applications on which the lime type of electrode is used, with the possible exception of highly restrained joints on heavy sections or on steels of high hardenability.

For full details about sizes, chemical analyses, and A.I.S.I. Nos. of these performance-proved stainless steel electrodes, fill in the coupon, and mail it today for a free copy of Catalog No. 120A. Air Reduction, General Offices, 60 East 42nd St., New York 17, N. Y. In Texas: Magnolia Airco Gas Products Company, General Offices, Houston 1, Texas. Represented Internationally by Airco Export Corporation.

Airco Electrodes for stainless steel welding

AIRCO No.	A.I.S.I. No.	SIZES	Lime Type Coating (C.D.C.)	Lime-Titania Type Coating (A.C.-D.C.)
19-9	308	1/16 to 1/4"	Yes	Yes
19-9Cb	347	1/16 to 1/4"	"	"
18-8Mo	316	1/16 to 1/4"	"	"
25-12	309	1/16 to 3/16"	"	"
25-12Cb	309Cb	1/16 to 1/4"	"	"
25-20	310	1/16 to 3/16"	"	"
25-20Cb	310Cb	3/32 to 3/16"	"	"
25-20Mo	310Mo	3/32 to 3/16"	"	"
18-8Mo-Cb	316Cb	3/32 to 3/16"	"	"
18-83.5Mo	317	1/16 to 1/4"	"	"
35Ni-15Cr	330	3/32 to 3/16"	"	"
4-6Cr .5Mo	502	3/32 to 3/16"	"	No
9Cr .50Mo	....	3/32 to 3/16"	"	"
12Cr	410	3/32 to 3/16"	"	"
16Cr	430	3/32 to 3/16"	"	"
28Cr	446	1/8 to 3/16"	"	"

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Headquarters for oxygen, acetylene and other gases . . . carbide . . . gas welding and cutting apparatus and supplies . . . arc welders, electrodes and accessories

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III

Merz Pneumatic Taper Gages

Check taper and out-of-round in a single operation

MERZ Pneumatic Taper Gages perform *both* these precision functions at *once.* Measured by two hard steel gaging rings, taper variations are registered on one dial—either to totals of plus or minus 30′ (in graduations of 5′) or to plus or minus 10′ (in graduations of 1′). Simultaneously, out-of-round conditions up to .002 are registered on the second dial, in increments of .0001. MERZ Pneumatic Taper Gages—in sizes to fulfil *all* your inspection requirements—are fast, accurate, durable and dependable. Write for complete information.

MERZ also manufactures a standard line of pneumatic gages in five models, as well as standard A.G.D. and special gages.

MERZ *Engineering Company*
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KEEP PRODUCTION ROLLING ON BEARINGS FROM
L & S

Two-Fold Source of Supply—L & S manufactures radial, thrust, roller bearings, and pillow blocks.—L & S is distributor for other manufacturers.

Write Today — List quantity, number and brands of bearings you need. You will be advised immediately.

We Pay Best Prices For Surplus Bearings

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Clarion and Philipsburg, Pa.

C. L. Amos Coal Co. (Canada) Ltd.
Montreal, P. 2.

(*Continued from page* 254)

NIGP is composed of purchasing agencies of states, cities, counties, boards of education and other divisions of government.

"General Littlejohn's decision on machine tools is a realistic recognition that surplus property should not be shelved indefinitely and allowed to become a frightening burden hanging over the market, stifling legitimate trade," Mr. Pleydell said.

"For three years, schools and other governmental agencies have suffered under a disposal program that failed to acknowledge their needs and their priority claims. Our Institute has consistently opposed this policy. In March, General Littlejohn held a conference in Washington at which NIGP presented the facts to him. His order on machine tools followed a study of these facts. We believe that this is a big step forward for schools and other governmental agencies of this country. General Littlejohn has demonstrated by action that he understands and is sympathetic with the needs of state and local government. Extension of the machine tool donation policy to all surplus items in long run supply would prove a valuable contribution to the economic advancement of the United States", Mr. Pleydell said.

Mr. Pleydell is chairman of a NIGP Surplus Property Advisory Committee.

* * *

NIGP ASKS FOR 15% SET ASIDE OF SURPLUS OFFERINGS FOR LOCAL GOVERNMENTS

Representatives of the National Institute of Governmental Purchasing has asked War Assets Administration to set aside 15 percent of all surplus offerings for purchase by state and local governments.

Meeting with WAA officials, the governmental purchasers also recommended that items needed particularly by local governments be placed on a set-aside list for sale exclusively to local governments, including items now on the set-aside list for veterans.

They urged that local governments be permitted to buy back at a 95 percent discount typewriters yielded in large numbers to the Federal Government in response to appeals during the war years. In addition they asked that machine tools be leased at a nominal charge, not only to educational institutions but to all units of local government, as a reservoir to provide against a national emergency. An alternative plan also was suggested for the development of a machine tools donation program for such buyers since, according to purchasing officials, budget limitations now prevent local governments from acquiring machine tools at any price.

Harold A. Barnes, Deputy Administrator, Office of Plans and Policies, took all recommendations under advisement and promised to work with a subcommittee to iron out difficulties previously encountered by government purchasing officials and to

(*Please turn to page* 259)

IN GREENFIELD, THE ARMY GOT ITS GAGES

GTD "Greenfield" got into gage-making in a big way in World War I, the first mechanized war in history. Overnight, hundreds of new plants had to be rushed into production to meet the need for mechanized fighting equipment. And in all these plants, the No. 1 need was for gages — to guarantee absolute accuracy in mass production and to insure the interchangeability of parts. Long-time specialists in precision tool manufacture, GTD "Greenfield" had been making gages since the turn of the century — so the Army came to "Greenfield".

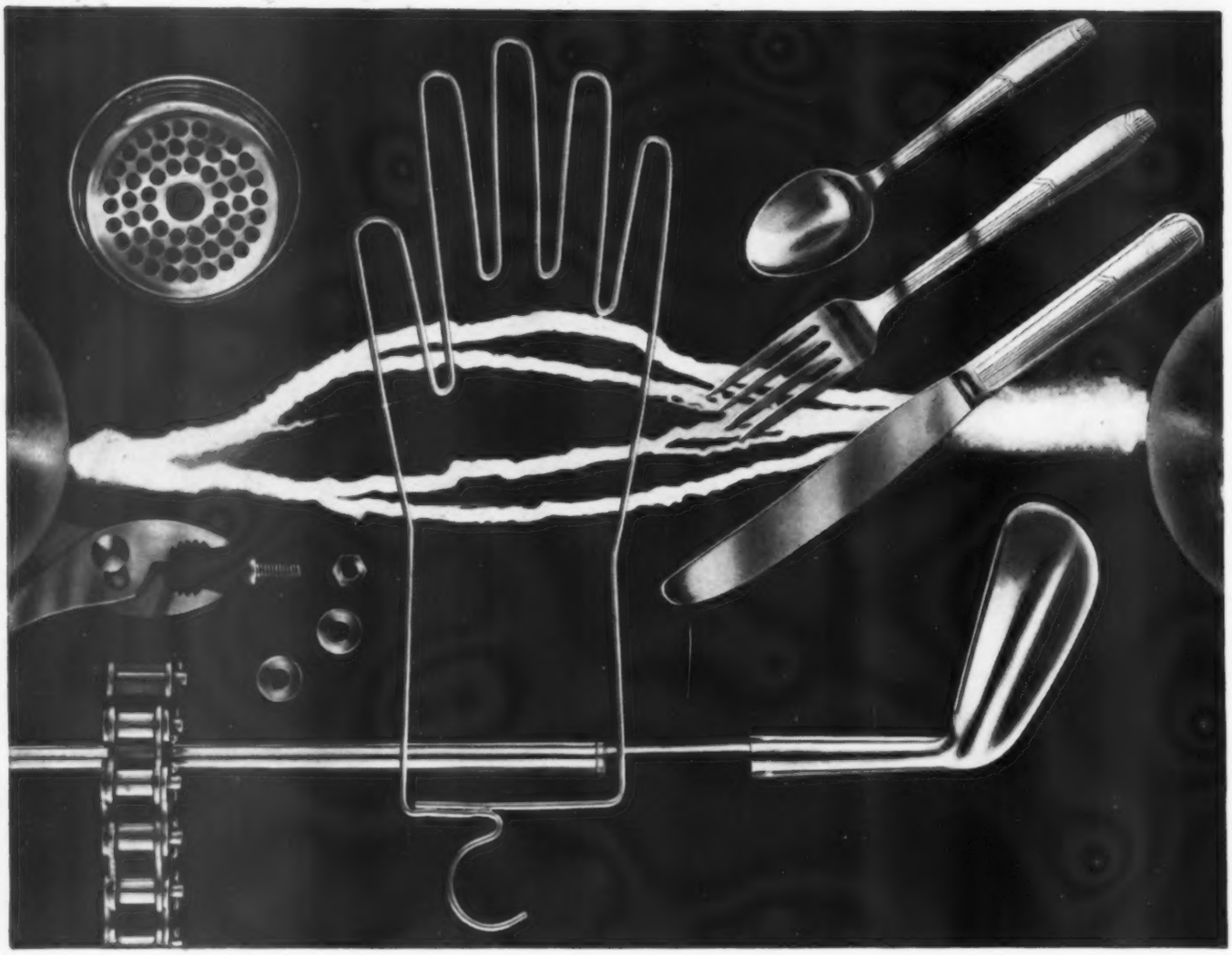
During World War I, GTD "Greenfield" turned out tens of thousands of gages. And ever since, it has pioneered in the production of thread gages, essential in this age of precision machinery — for war and peace.

Latest in GTD "Greenfield" gage-making has been the development of a new type of chromium-plated surface on gages. This exclusive plating method means a longer lived gage, more than makes up for their high first cost and results in worthwhile net savings. Thread gages as well as plain gages can be furnished with this chromium-plated surface.

GTD Greenfield 75th YEAR

GREENFIELD TAP and DIE CORPORATION
Greenfield · Massachusetts

The GEOMETRIC TOOL COMPANY
New Haven, Connecticut · In Its Fifty-Fourth Year
A DIVISION OF GREENFIELD TAP and DIE CORPORATION



Electricity scrubs Stainless Steel behind the ears

Your company may be one of many who are considering the increased use of stainless steel bars for greater corrosion resistance, heat resistance, attractiveness, or for other reasons. *Sixty* grades and shapes of ARMCO Stainless Bars enable you to choose the *specific* steel that meets your manufacturing requirements and cuts production costs.

If the product or part to be made of Stainless is of a size or shape that prohibits the use of mechanical polishing, it will pay you to investigate the economy of the electropolishing process developed by Armco research engineers. By this process, small articles of stainless steel are treated in an electrically charged chemical bath. The surface is quickly polished — products come out brighter than new dimes.

For an evaluation of this field-tested process and its use on your products, ask for Armco's booklet, *Electropolishing of Stainless Steels.* Just address Rustless Division, The American Rolling Mill Company, 1161 Chase Street, Baltimore, Maryland. Export: The Armco International Corporation.

TURN IN YOUR SCRAP—
PROTECT YOUR STEEL SOURCE

Unless steel mills get more scrap at once, everybody must wait longer for steel. You can help. Check your unusable tools, machines and obsolete equipment. Collect all the iron and steel scrap you can find and speed it through regular channels to the mills. The need has never been more critical—not even in wartime.

Rustless
DIVISION OF ARMCO
THE AMERICAN ROLLING MILL COMPANY

(*Continued from page* 256)

explore constructive programs in the interest of local government agencies.

Robert M. Field, Associate Administrator of WAA, told the group that machine tools and used clothing, available in great quantities, could be used to advantage by schools and institutions throughout the nation.

Arthur G. Eaton, Director of WAA's Public Interest Division, presided over the two-day meeting. The governmental purchasers, headed by NIGP President Albert Pleydell, New York City, came from various sections of the United States.

* * *

STEEL WIRE CONVEYOR BELT TURNS CORNERS, COOLS PRODUCT

A steel grid conveyor belt that can turn corners without tipping—describe a complete circle if need be!—move a product uphill or down, or horizontally straight ahead has been designed for industrial process lines with special space requirements. Known as "Flex-Grid," this wire-built belt is manufactured by Cyclone Fence Division of American Steel & Wire Company, United States Steel Corporation subsidiary, in Waukegan, Ill.

The steel grid conveyor belt turns curves and saves space

Not only does the new conveyor accommodate all the space needs of a three-ring industrial circus, but its open construction permits the air circulation required for cooling a light-weight product while in motion. A section 2 feet wide weighs only 3 pounds per linear foot and is made in bright, galvanized, tinned or stainless steel wire as may be most desirable to meet special conditions in manufacturing operations.

Thus the cooling belt lines of a baking plant, for example, may be designed to hug the walls, turn as many corners as necessary, and to stack flights to ceiling heights with as little as 10 inches between loaded faces. Preliminary reports from users are reported to indicate exceptionally long service life and low costs because of Flex-Grid's simplicity. There are no lubrication problems, and because steel wire is used, no difficulties result from fats, oils, greases, fumes, or heat.

Flex-Grid belts must be assembled to meet the needs of the individual user's design, taking into consideration such problems as service life, speed of transfer, weight, power required to operate,

(*Please turn to page* 260)

CAN YOU GUESS THE ANSWERS?
WHAT IS THE IRON MOUSE?
Because it nibbles irregular shapes out of flat metal, "like a mouse nibbles cheese", the Campbell Nibbler has been called "the Iron Mouse." Campbell Nibblers and Abrasive Cutting Machines, made by ACCO's Andrew C. Campbell Division, help production in thousands of shops.
THIS BOY CARRIES A PIECE OF GRASS
WHY?
Bamboo belongs to the grass family—and it makes good fishing poles. Most of us think of grass as something that has to be cut frequently. It's easy with a good mower—made by ACCO's Pennsylvania Lawn Mower Division.
WHAT IS A SPINNING CHAIN?
A chain used to help connect the sections of pipe used for drilling oil wells. ACCO's American Chain Division makes chain for many oil field uses and for hundreds of other needs in industry, agriculture and transportation.
ACCO Products Include: AMERICAN Chain • TRU-LAY and LAY-SET Preformed Wire Rope • TRU-LAY Cable and TRU-LOC Swaged Terminals for Aircraft • PAGE Wire, Chain Link Fence and Welding Rods • CAMPBELL Abrasive Cutters • READING-PRATT & CADY Valves and Fittings • PENNSYLVANIA Lawn Mowers • MARYLAND Bolts & Nuts • "ROCKWELL" Hardness Testers • WRIGHT and FORD Hoists • HELICOID Pressure Gages • MANLEY Automotive Service Equipment • OWEN Silent Springs.
ACCO
AMERICAN CHAIN & CABLE BRIDGEPORT CONNECTICUT

Are you BUYING ROPE for PAINTERS

Courtesy Port of N.Y. Authority

Your painters, whose lives so often depend on the rope that supports their scaffolding, deserve safe, durable rope of unquestionable quality.

Whitlock Waterflex Manila is ideal for rigging and scaffolding work. Scientifically laid, and treated by the Waterflex Process, it is strong and durable. It is non-kinking and easy to handle whether wet or dry. For the safety of your painters and plant maintenance personnel, specify Whitlock Waterflex.

WHITLOCK

WHITLOCK CORDAGE COMPANY

46 SOUTH STREET · NEW YORK 5, N. Y.

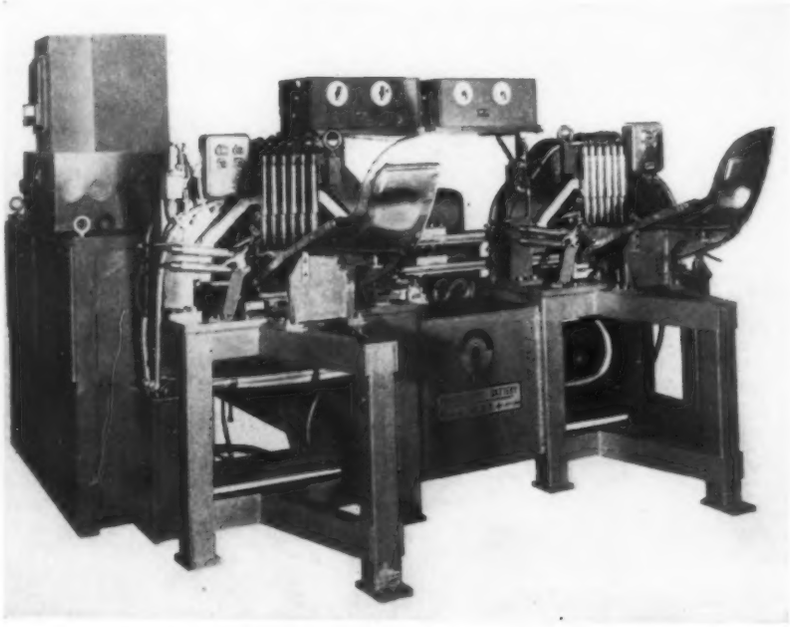
(*Continued from page 259*)

and slippage. As the belt is assembled from individual straight, stiff wires, it is possible to compensate wear factors by replacing one or more links at a time, a simple and easy operation.

The belt is made from No. 9 gage steel wire assembled on ½-inch centers and is available in standard widths, from 6 inches to 2 feet, in straight lengths or curved sections. Normal construction involves lengths up to 40 feet.

In the baking industry, Flex-Grid conveyors are replacing cooling racks, thus eliminating the trucks, artificial cooling chambers and exhaust fans normally required. As an instance of compactness, one doughnut cooler has been designed to use a series of 15 tiers of flights in a space 28 feet long, 2 feet wide and 9 feet high. The product cools more evenly and quickly and can be delivered more promptly from the ovens to loading stations, assuring a fresher, more tasty product. Bread fresh from the ovens may be loaded directly on open Flex-Grid conveyors for cooling and prompt delivery to wrapping machines and from them to the loading stations.

Battery Operated Multi-Spot Welding Machine



300 assemblies per hour are produced on this machine, which makes 11 welds with two shots.

Double station battery-powered machines for multi-spot welding in the assembly of sheet metal parts, is being produced by the Progressive Welder Company, Detroit. Machines are being used for welding dust shield assemblies (illustrated) in the plant of one of the "big three", and are designed for handling both right and left hand shield assemblies. Batteries (16 cells - 8 volt) are contained in a housing in the rear center of the machine. At the left are a group of package-type chargers, above which is the charger control. A total of 30 kva—balanced on three phases—is required to keep the batteries charged.

These dust shields are assembled 140% faster through use of battery powered welding machines.

In operation, only two "shots" from the batteries are required to complete all 11 welds for an asembly. The first "shot" produces 6 welds simultaneously, while the second produces the other five welds. Production is 300 assemblies per hour against a previous output of 125 assemblies per hour. The material is 20 gage cold rolled steel.

The machine represents the first use of stored energy machines for commercial multi-spot welding.

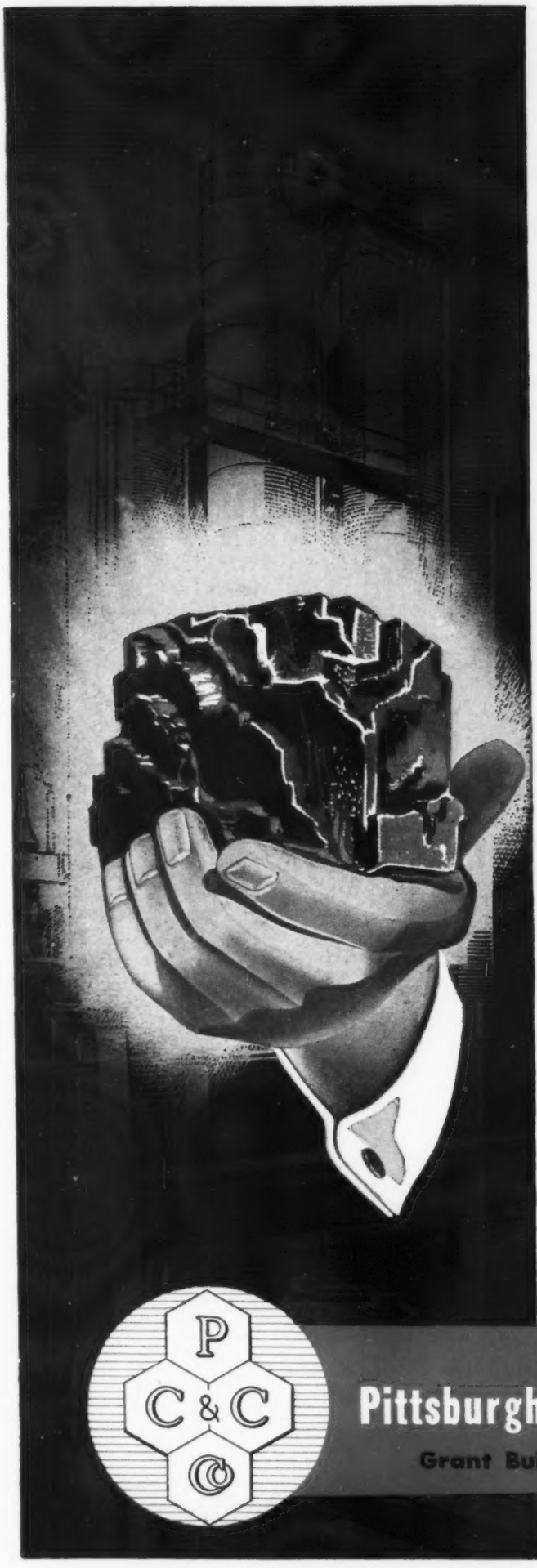
1 1 1

NEW PRINCIPLE IN OIL BURNING

Iron Fireman Manufacturing company announced a new principle of heavy fuel oil control at the recent meeting in Cleveland, according to C. T. Burg, vice-president in charge of sales.

It is in the new series of industrial

(*Please turn to page 262*)



"Pittsburgh"

SPECIALISTS IN CHEMICALS DERIVED FROM COAL, TAR AND BY-PRODUCT GAS

Unlocking the chemical treasure house of coal, and extracting and recovering its multifold components for the uses of science, industry and commerce, is the business of Pittsburgh Coke & Chemical Company.

Here modern plant facilities, earnest and foresighted research, favorable shipping location and advantageous sources of supply combine to assure you of dependable, uniform, quality chemicals.

Expanding volume and range of products and increasing capacities make *Pittsburgh* better able to serve you than ever. Our technicians will welcome an opportunity to discuss your needs.

"PITTSBURGH"
Coke and Chemical Products

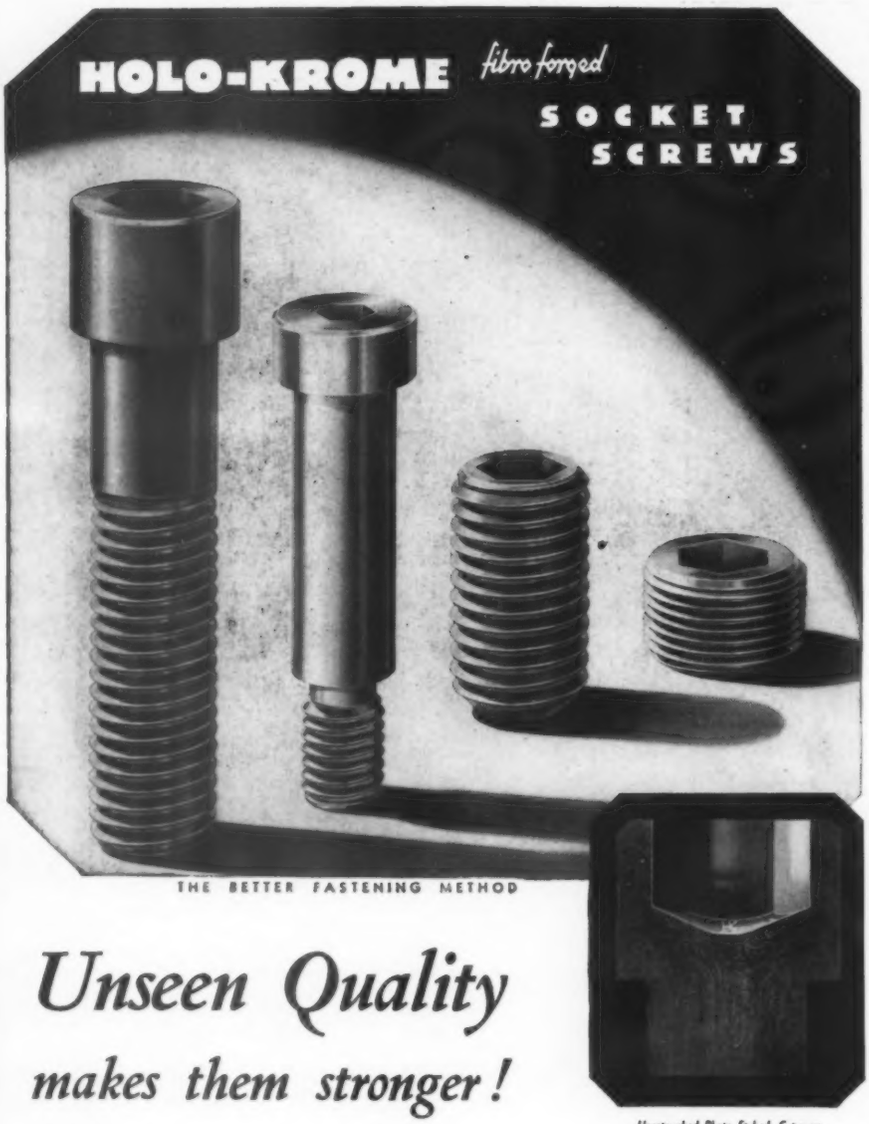
AROMATIC HYDROCARBONS:
BENZOL, TOLUOL, XYLOL, NAPHTHALENE
TAR ACIDS: PHENOL, CRESOLS
SULPHURIC ACID: ALL GRADES
TAR, PITCH and CREOSOTE
SULPHATE OF AMMONIA
TAR BASES: PYRIDINE, PICOLINES
SODIUM CYANIDE · SODIUM THIOCYANATE
ACTIVATED CARBONS

OTHER PRODUCTS:
NEVILLE COKE—EMERALD COAL—PIG IRON—GREEN BAG CEMENTS—CONCRETE PIPE—LIMESTONE PRODUCTS—IRON ORE

INQUIRIES INVITED

P C&C Co

CHEMICAL SALES DIVISION
Pittsburgh Coke & Chemical Company
Grant Building · Pittsburgh 19, Pennsylvania



Unseen Quality
makes them stronger!

Unretouched Photo Etched, Cutaway Holo-Krome Socket Head Cap Screw.

It's the uninterrupted, unbroken and unsevered fibrous structure accomplished exclusively by the Holo-Krome patented method of Completely Cold Forging . . . The results of this exclusive Holo-Krome feature is giving thousands upon thousands of Socket Screw users guaranteed unfailing performance in all types of applications — Specify "Holo-Krome".

Holo-Krome Distributors are ready to serve you from their warehouse stock.

THE HOLO-KROME SCREW CORP., HARTFORD 10, CONN., U. S. A.

HOLO-KROME
fibro forged SOCKET SCREWS

(*Continued from page* 260)

heavy fuel oil burners that the principle is used to stabilize the feeding rate of fuel, regardless of changes in fuel oil temperature or viscosity. These new burners have capacities from 8 to 125 gallons per hour.

"Even though the fluidity can vary widely with changes in temperature, these Iron Fireman burners will deliver the same quantity of oil, no matter how thick or thin, and will feed evenly at the maximum burning rate or throttled down to low capacity," Burg announced. "No regulating valve or viscosity compensating device is required."

The new burners have capacities from eight to 125 gallons per hour

The company is producing these rotary-cup type burners at its factories in Portland and Cleveland. These new industrial oil burners supplement company's industrial line of coal stokers for power, processing and heating.

CHASE BAG CO. WINS ADVERTISING AWARD

The Chicago Federated Advertising Club has awarded the Chase Bag Co. first prize in its class for outstanding advertising during 1946. The award was based on one in a series dramatizing the return of servicemen. The jury was made up of experts in advertising techniques and production. W. N. Brook, assistant sales manager, accepted the certificate of award at a luncheon in Chicago on May 8.

DOUGLAS FIR PLYWOOD STANDARD RECOMMENDED REVISION

The Division of Trade Standards, National Bureau of Standards, Washington, D. C., has sent to producers, distributors and users of Douglas Fir Plywood, recommended revision of Douglas Fir Plywood (6th Edition) Commercial Standard CS45-45 (TS-4394) for their written acceptance. The major changes are a reduction of the number of grades; renaming Moisture-Resistant type to Interior type; permitting the use of western hemlock, Sitka spruce, noble fir, and other western softwood species in the inner plies of Sound 2 Sides, Sound 1 Side, Industrial, and door panel grades in the Interior type only; increasing the number of cycles of the bondage test for the interior type from two to an average of 10; and the inclusion of a fire test for Exterior type bondage.

(*Please turn to page* 264)

MAKE GREATER USE OF BRIDGEPORT'S WAREHOUSE SERVICE

Save time by using the nearest Bridgeport warehouse stocks for rush orders or for limited quantities of brass, bronze, copper and Duronze*.

Your needs will be met with quality strip metal in various widths and tempers for economical fabricating and finishing; Ledrite** rod in a wide range of sizes for high speed screw machine operation; naval brass and Duronze III for corrosion resistance and high strength; Duronze wire for cold upsetting; seamless brass tubing, copper water and oil burner tubing and pipe.

Slitting facilities are available for converting metal into narrower widths to meet specific requirements.

To help you in the selection and application of brass mill products, Bridgeport's technical literature and engineering representatives are always available. Call our nearest branch office for warehouse service and for your mill requirements.

*Reg. U. S. Pat. Off. **Trade-mark

Call Your Local Office for Warehouse Service

Warehouse and Jobber Stocks Available for Prompt Delivery

BRANCH OFFICES AND ★WAREHOUSES

Atlanta 3, Georgia...701 Volunteer Building
Boston 16, Massachusetts...524 Statler Bldg.
★ Chicago 32, Illinois.....3453 W. 47th Place
Cincinnati 2, Ohio.....1703 Carew Tower
★ Cleveland 6, Ohio .....1921 E. 119th Street
★ Denver 2, Colorado .....1962 Blake Street
Detroit 26, Michigan.....2328 Buhl Bldg.
Grand Rapids 2, Mich..510 Assoc. Com. Bldg.
★ Houston 1, Texas.....2216 Walker Avenue
Indianapolis 4, Indiana..Circle Tower Bldg.
Jacksonville, Florida, 5133 Appleton Avenue
★ Los Angeles 12, California, 130 S. Hewitt St.
Milwaukee 2, Wisconsin, 715 N. Van Buren St.
★ Minneapolis 1, Minnesota, 100 N. Second St.
★ Newark 8, New Jersey .....325 Jelliff Avenue
New York 17, New York..420 Lexington Ave.
New York—Jobber Stocks Available
Philadelphia 3, Penn....Broad St. Sta. Bldg.
Pittsburgh 19, Pennsylvania, 1322 Gulf Bldg.
★ Providence 3, Rhode Island...60 Clifford St.
Rochester, New York, 816 Reynolds Arc. Bldg.
★ St. Louis 3, Missouri.....2135 Delmar Blvd.
St. Paul 5, Minnesota...703 Ashland Avenue
★ San Francisco 3, California...1155 Bryant St.
Washington 5, D. C..715 Southern Building

BRIDGEPORT BRASS COMPANY • Bridgeport 2, Conn. • Established 1865

Mills at Bridgeport, Conn., and Indianapolis, Ind.—In Canada: Noranda Copper and Brass Limited, Montreal

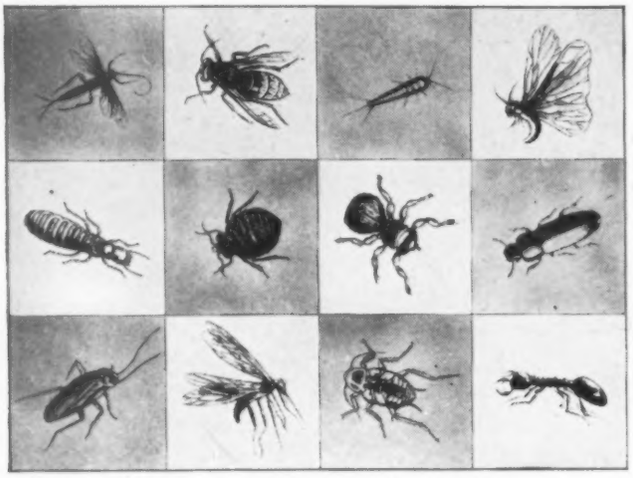
"Bridgeport" BRAND

Brass-Bronze-Copper-Duronze

STRIP ROD WIRE TUBING

BRIDGEPORT BRASS

PICK the PESTS

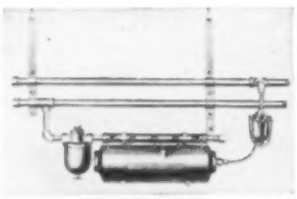


...you'd like to give the "AIR" Forever!

Do your special insect pests crawl or fly? Thrive on Food or Fabric? Run rampant in a midget-sized cubicle or nest in the hard-to-reach places of a tremendous factory? Get rid of them with the West Atomizer —an effective scientific method of insect control. Designed to eliminate all pests *wholesale* with a fast "positive-kill."

A permanent installation which shortly pays for itself in time and labor saved (plus the tremendous advantage of complete coverage) the West Atomizer is perfected for efficient and effective use with compressed air. Just turn on the air valve and it *shoots out* a deadly fog of insecticide which reaches into the tiniest cracks and crevices. *Does its lethal magic as quickly in a mile-long plant as in a small store room.* Dispenses a "dry" mist so it won't wet floors, walls, or product if used as directed.

With the West Atomizer, use Vaposector Fluid—one of West's complete line of effective insecticides, specially prepared to help lick your insect problem. Vaposector is a concentrated, odorless insecticide—and is safe to use. Why not consult one of over 475 trained West representatives at once?



Products That Promote Sanitation

WEST Disinfecting Company

42-16 WEST STREET
LONG ISLAND CITY 1, N. Y.

★BRANCHES IN PRINCIPAL CITIES OF THE UNITED STATES AND CANADA

CLEANSING DISINFECTANTS - INSECTICIDES - KOTEX VENDING MACHINES
PAPER TOWELS - AUTOMATIC DEODORIZING APPLIANCES - LIQUID SOAPS

EASTERN STATES EXPOSITION PLANNED FOR SEPTEMBER

New products and equipment designed to make living and working easier and more comfortable are scheduled to be exibited, in some cases for the first time, at the Eastern States Exposition in Springfield, Mass., September 14-20. The exposition has been inoperative for the past six years during which its facilities were employed by the army as a quartermaster depot. The redesigned interior of the Industrial Arts Building is said to feature improved and modernized exhibiting facilities. A motion picture theater seating approximately 250 persons is being installed in the building where exibitors will portray their products in action or phases not readily demonstrable in an exhib t.

SPEED AND FEED SELECTOR FOR STAINLESS STEEL

A new circular "Cutting Speed and Feed Selector" quickly gives proper speeds and feeds for all common machining operations on 8 types of Republic Enduro Stainless Steel. Form cutting,

milling, drilling, and other operations usually performed on an automatic are included. The selector also converts cutting speeds for stock from 0.1" to 8" diameter. The selector may be obtained from Republic Steel Corp., Cleveland 1, Ohio.

CARBON MONIXIDE DETECTOR TUBES

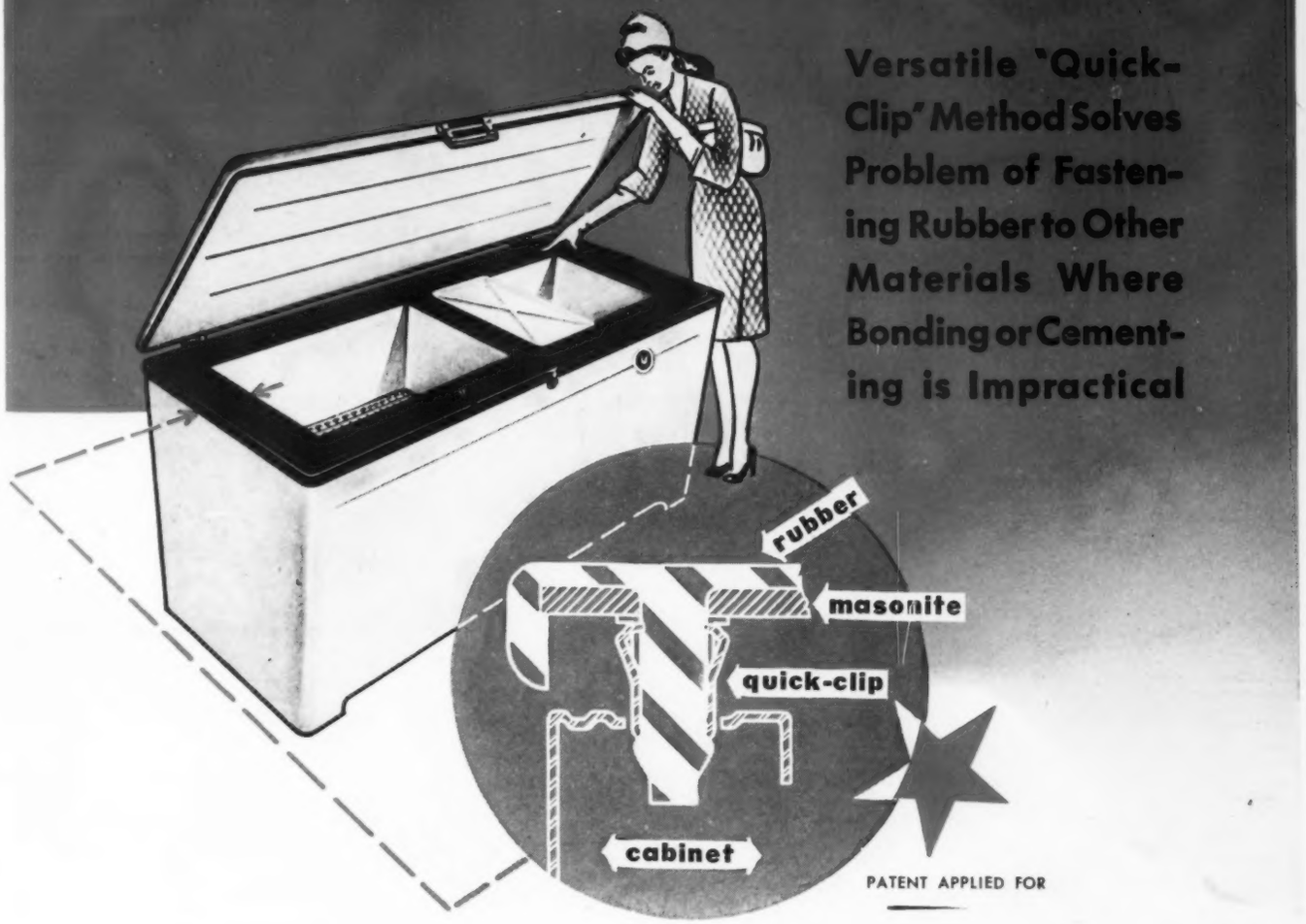
Manufacture of carbon monoxide detector tubes, invented and made exclusively during the war by the National Bureau of Standards, Washington, has been placed on a peace-time footing through sale of the bureau's equipment to the Mines Safety Appliance Co., Pittsburgh, Pa.

War Assets Administration, handling the sale at the request of the Bureau of Standards, said that the $9,500 bid submitted by the Pittsburgh company was the highest submitted by four firms licensed by the bureau to make and distribute the tubes. The equipment cost the government $6,423.59.

The tubes, covered by patents issued or pending, are in demand for use in

(Please turn to page 266)

It's a "Snap" with "Quick-Clip"



Versatile "Quick-Clip" Method Solves Problem of Fastening Rubber to Other Materials Where Bonding or Cementing is Impractical

PATENT APPLIED FOR

Although highly satisfactory in countless applications, the process of cementing or bonding rubber to metal or other materials is not always practical. One of many examples is the rubber breaker strip on low temperature "food freeze" cabinets.

ORCO engineers solved the problem by applying the new "QUICK-CLIP" method of fastening rubber to metal or other material. Rubber stems are molded integral with the rubber breaker strip and project downward on its under side. Specially designed metal clips—"QUICK-CLIPS"—are fitted to the rubber stems. Holes to receive these rubber-metal stems are located in the metal to be covered.

It's a fast, easy job for the assembler to place the breaker strip in position and snap the stems into the respective holes. This snap-in feature permits the entire fastening job to be handled from one side of the breaker strip. Attachment is positive and permanent, yet the replacement of the breaker strip after long usage is accomplished easily and without damage to the cabinet.

The Orco "QUICK-CLIP" method of fastening rubber to metal and other materials has wide application in diversified industries—automotive, refrigeration, ventilating equipment, office equipment, safety equipment, juvenile equipment, and in many types of equipment for the building industry.

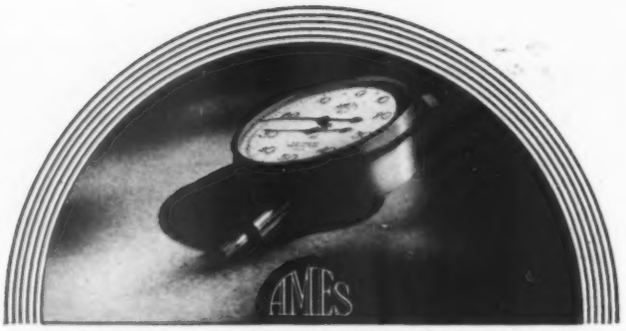
Pioneers in the development of rubber-to-metal adhesion and originators of the new "QUICK-CLIP" method, The Ohio Rubber Company is prepared to apply the most efficient method of fastening rubber to metal or other material. For complete details, communicate with:

OHIO RUBBER CO

FACTORIES:
WILLOUGHBY, OHIO • CONNEAUTVILLE, PENNA.
LONG BEACH, CALIFORNIA

BRANCH OFFICES:
NEW YORK • CHICAGO • DETROIT • BOSTON
CLEVELAND • INDIANAPOLIS

THE OHIO RUBBER COMPANY · WILLOUGHBY, OHIO

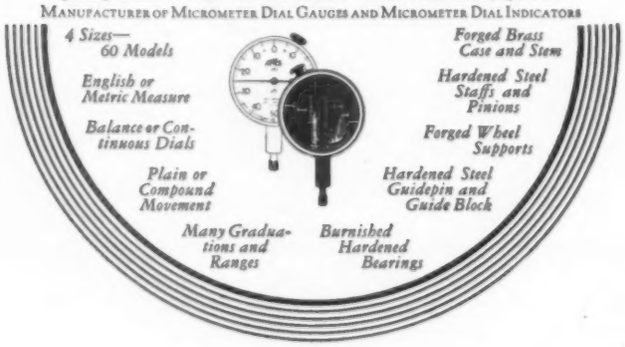


WHEN MEASURING IS YOUR PROBLEM...

AND your requirements combine high standards of accuracy, long service-life, and the greatest possible economy of operation—you'll find the answer in AMES' complete line of *quality* Micrometer Dial Gauges and Indicators. Instruments that are *on the job* the world over—solving the complex measuring demands of modern industry. Send us *your* problem today.

Representatives in principal cities B. C. AMES CO. *32 Ames Street Waltham 54, Mass.*

MANUFACTURER OF MICROMETER DIAL GAUGES AND MICROMETER DIAL INDICATORS


4 Sizes— 60 Models
English or Metric Measure
Balance or Continuous Dials
Plain or Compound Movement
Many Graduations and Ranges
Burnished Hardened Bearings
Hardened Steel Guidepin and Guide Block
Forged Wheel Supports
Hardened Steel Staffs and Pinions
Forged Brass Case and Stem

THE *KNURLED* HEAD SAVES ASSEMBLY TIME

UNBRAKO

Reg. U.S. Pat. Off.

Knurling of Socket Screws originated with "Unbrako" in 1934.

KITS: Pats. Pend.

You can't screw socket screws in or out without a hex socket wrench, so why not get our No. 25 or No. 50 "Hallowell" Hollow Handle Key Kit which contains most all hex bits.

This "Unbrako" Socket Head Cap Screw with the Knurled Head saves time, facilitates compact designs, reduces weight and cost. The knurling provides a slip- and fumble-proof grip—even though the fingers and heads be ever so oily—therefore, it can be screwed-in faster and farther before it becomes necessary to use a wrench. Available in sizes from #4 to 1½" in diameter and a full range of lengths, millions upon millions are in use throughout industry. Write for your copy of the "Unbrako" Catalog. **"Unbrako" and "Hallowell" Products are sold entirely through Industrial Distributors.**

OVER 44 YEARS IN BUSINESS

STANDARD PRESSED STEEL CO.

JENKINTOWN, PENNA. BOX 590 • BRANCHES: BOSTON • CHICAGO • DETROIT • INDIANAPOLIS • ST. LOUIS • SAN FRANCISCO

(*Continued from page 264*)

mines, garages and various industrial plants and by health departments. Danger of carbon monoxide poisoning can be avoided by using the simple, relatively inexpensive devices which indicate by color as little as one part of dangerous gas in 500,000 parts of air, WAA said.

The color indicator used in the detector is a yellow silica gel impregnated with a complex silico-molybdate compound and catalyzed by means of palladium sulfate. This mixture is placed in a five-inch glass tube the size of a lead pencil, and air to be tested is forced through. The yellow indicator turns green if carbon monoxide is present, the degree of green indicating the amount of poisonous gas present.

In use, tips of the tube are broken off and one end inserted in a rubber aspirator bulb. The bulb is squeezed once, forcing air through the tube past the chemical coating on the interior. The color of the gel is then compared with a set of standard color patches. A test can be made by an untrained person in about a minute.

SUGGESTS EIGHT TO TEN YEAR MACHINERY DEPRECIATION SCHEDULE

Comptrollers of industrial corporations who cling to a set 20-year depreciation schedule because that is standard accounting procedure, may be driving their companies to business suicide.

This is the conclusion reached by Col. Harry A. Toulmin, Jr., president of The Hydraulic Press Manufacturing Company, in a signed article in the first issue of the company's new monthly publication "Press Proofs".

"Comptrollers are important people but some of them have the right answers to the problem of lower production costs," Col. Toulmin writes.

"A comptroller who doesn't know the difference between depreciation and obsolescence should consider his own case. He should not be suprised if one of these days he is replaced by a new model.

"A machine is obsolete when it has ceased to do its work as economically as this can be done by a newer machine," he points out.

More than a third of the metal working machines in U.S. factories in operation today are more than ten years old. A depreciation schedule of eight to ten years is suggested to replace the present twenty-year practice.

Col. Toulmin is the senior partner of Toulmin & Toulmin, as well as president, general manager and chairman of the board of The Hydraulic Press Manufacting Company at Mount Gilead, Ohio, president of Hydro-Power Systems, Inc., and a director of Univis Lens Co., Univis Corporation, Commonwealth Engineering of Ohio, Business Corners, Inc. and Chemical Development Corporation.

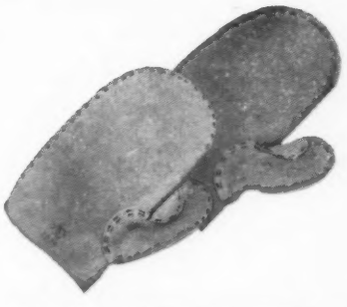
He is the inventor of many pieces of apparatus in both heavy and light machinery and has written books on patent and business law.

6 FISTFULS

OF LONG, RUGGED DUTY in GLOVES, MITTENS, PADS

Steel staple stitching at points of wear and tear make these AO Gloves, Mittens and Pads of chrome-tanned cowhide a sound investment in materials handling. They are flexible and comfortable to wear while protecting hands from rough stock. These highly serviceable products are part of a complete line of AO steel-stapled gloves and hand pads designed for specific jobs. Your nearest AO Safety Representative can supply you.

AO 1644 GLOVE — Extended glove life is due to steel-stapling of palm and fingers over reinforcing leather strips and steel-stapled leather patch on thumb. Also all seams on face of glove steel sewed. 4" gauntlet. For handling heavy castings, rough scrap in foundries, steel mills.



AO 1674 REVERSIBLE MITTEN — Double the wear because it may be worn on either hand. All seams *steel* sewed — to provide the strength to withstand the rough steel stock this hard-working mitten handles.

AO 1201 HAND PAD—Open back — fully protected thumb. Like the glove and mitten, the hand pad is made of top grade chrome-tanned cowhide. Reinforced with leather palm patch steel-stapled to palm.

Safety Division

American Optical COMPANY

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

What costs more to LOOK AT than it does to BUY?

■ Business forms! The business forms you use cost far more to *look* at—reading, checking, referring—than they ever cost to buy. You pay even more to *handle* them, more still to *write* on them—perhaps 50 times as much as the forms themselves!

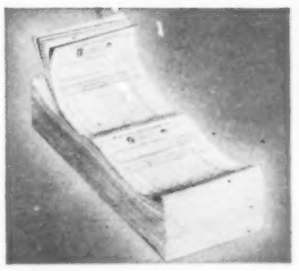
Why not reduce these costs? Uarco Business Forms assure:

Minimum *handling* . . . forms are combined so that one form serves many departments . . . pre-assembling saves time and bother.

Minimum *writing* . . . all necessary copies, 20 or more, come from a single writing.

Minimum *looking* . . . facts are always easy to reach, easy to read.

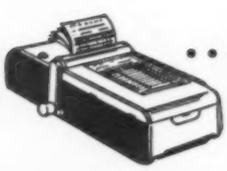
Take advantage of these savings! Call your Uarco Representative for a complete survey . . . that's far easier than taking the time for it yourself. No obligation whatever. UARCO INCORPORATED, Chicago, Ill.; Cleveland, Ohio; Oakland, Cal.; Deep River, Conn. *Offices in All Principal Cities.*



For Instance... Your Uarco Representative may suggest Speed-O-Forms to start savings right away. In five seconds, Speed-O-Forms turn any typewriter into a continuous billing machine. No aligning, no carbon stuffing—the typist has only to type.

UARCO
INCORPORATED

BUSINESS FORMS



AUTOGRAPHIC REGISTERS AND REGISTER FORMS

SINGLE SET FORMS

CONTINUOUS-STRIP FORMS FOR TYPEWRITTEN AND BUSINESS MACHINE RECORDS

PRODUCTION EXECUTIVE

Office Equipment and Supplies

Monthly FORMS FORUM

A simple system that works very well. Forms used by Imperial Brass Manufacturing Company include "Return Goods" form and Inter-office Cancellation Notice

"OUR System is simple and works very well" states W. B. Burnet, Purchasing Agent, The Imperial Brass Manufacturing Company, 1200 West Harrison Street, Chicago, Ill., who submitted the accompanying purchasing department forms for use in the *Forms Forum*, with the statement that he hoped others would find something of interest in the procedure followed. Mr. Burnet, by the way, was recently elected first vice president of the Purchasing Agents Association of Chicago for the 1947-48 association year.

The forms submitted by Mr. Burnet include the following: Fanfold Purchase Order, Material Requisition, Return Goods Order, Request for Shipping Promise, Requisition for maintenance and operating supply needs, and Inter-office cancellation form.

The Purchase Order consists of six parts, namely, original for vendor with vendor acknowledgment form at bottom, duly perforated; the Purchasing Department File copy and Production Follow-Up copy with form at bottom of sheet for recording correspondence and record of shipments received, and copies for Stock Records and Receiving-Accounting with special record form—these two forms are illustrated.

PURCHASE ORDER

The Imperial Brass Manufacturing Co.

LONG DISTANCE TELEPHONE HAYMARKET 0741 — MAIN OFFICE & FACTORY 1200 WEST HARRISON ST. **Chicago** — CABLE ADDRESS "IMPERBRASS" WESTERN UNION CODE

THIS ORDER No. 82475 MUST APPEAR ON ALL PACKAGES, INVOICES AND SHIPPING DOCUMENTS

REQ. NO. S. O. NO. — SEND TO DEPT. — DATE — SHIP TO — VIA — SHIP ON — F. O. B. — TERMS

NO GOODS RECEIVED AFTER 3:45 P. M.—NOR ON SATURDAYS.

QUANTITY	DESCRIPTION	PRICE & UNIT

THE ABOVE ORDER IS SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS:
1. INVOICE EACH ORDER SEPARATELY.
2. PRICE MUST NOT BE HIGHER THAN LAST CHARGED OR QUOTED WITHOUT OUR WRITTEN CONSENT.
3. SPECIFICATIONS MUST NOT BE CHANGED OR SUBSTITUTED FOR WITHOUT OUR WRITTEN CONSENT.
4. NO CHARGES SHALL BE MADE FOR PACKING OR CARTAGE.
5. ORDER IS SUBJECT TO CANCELLATION IF NOT SHIPPED BY DATE SPECIFIED.
6. UNLESS OTHERWISE SPECIFIED SHIPMENT MUST BE VIA CHEAPEST WAY.
7. ITEMIZED PACKING LIST MUST ACCOMPANY EACH SHIPMENT.
8. CLASSIFY CORRECTLY TO AVOID EXTRA FREIGHT CHARGES.

IMPERIAL BRASS MFG., CO.

BY_____

Purchase Order form. Note receiving instructions.

Vendor acknowledgment form at bottom of purchasing order used by Imperial Brass Manufacturing Co. The actual size of this form is 8½" x 2¼".

ACKNOWLEDGMENT FORM TO BE RETURNED GIVING DATE OF SHIPMENT.

TO THE IMPERIAL BRASS MANUFACTURING CO.
1200 WEST HARRISON ST., CHICAGO, ILL.

ORDER No. 82475

DATE OF THIS ACKNOWLEDGMENT _____

YOUR ORDER COVERED BY THIS ACKNOWLEDGMENT WILL BE SHIPPED AS BELOW:

PARTIAL ON _____ COMPLETE ON _____ _____

VIA: _____

REMARKS: _____

SIGNED _____

(*Continued from page 269*)

The face of the order contains the following terms and conditions:

1. Invoice each order separately;
2. Price must not be higher than last charged or quoted without our written consent;
3. Specifications must not be changed or substituted for without our written consent;
4. No charge shall be made for packing or cartage;
5. Order is subject to cancellation if not shipped by date specified;
6. Unless otherwise specified shipment must be via cheapest way;
7. Itemized packing list must accompany each shipment;
8. Classify correctly to avoid extra freight charges.

Purchasing order color scheme is as follows: White, vendor, purchasing department file, and production follow-up; blue, stock records; green, receiving-accounting; and orange, the material-travel ticket. The last three copies are sent to the receiving department, being held there until goods are received, after which all copies are released for recording, the green copy for accounting being first sent to the purchasing department for attachment to back of invoice as evidence to support payment for material received.

Requisition Forms

"Requisition", on white stock, made in triplicate by requisitioning department, covers maintenance and operating supply needs. Two copies are sent to the purchasing department (white and green), and upon placement of purchase order, purchase order number and name of supplier are shown on these sheets, the green copy being returned to the originator.

(*Please turn to page 272*)

Form 6M P 10M 6-45A

USE CHECK ✓ TO INDICATE REQUIREMENTS

THE IMPERIAL BRASS MFG. CO.

REQUISITION

REQUISITION Nº 22200

Please ___PURCHASE ___DELIVER FROM STOR'Z ___MAKE ___REPAIR ___REPLACE ___FOR RESALE ___NOT FOR RESALE

Charge to _____ Date _____

OBTAIN FROM _____

PURCHASE ORDER NO. _____ DATE _____
PRODUCTION " " _____

FOR PURCHASING DEPARTMENT

Send to Plant No. _____ Dept. No. _____ Ship On _____ Ship Via _____

Sales Dept. Symbol _____ Approved _____ Signed _____

MAKE IN TRIPLICATE, ORIGINAL AND DUPLICATE TO PURCHASING DEPT., TRIPLICATE FOR YOUR RECORD.

Requisition for maintenance and operating supply needs.

FOR RESALE ☐
NOT FOR RESALE ☐

THE IMPERIAL BRASS MFG. CO.

MATERIAL REQUISITION Nº 9550

Purchase the following from _____ Purchase Order No. _____

Date Ordered _____ For _____ Sales Symbol _____ Send Plant _____ Dept. _____

QUANTITY	PART No. or SIZE	DESCRIPTION	PRICE

DO NOT SHOW ON PURCHASE ORDER

SHIP ON _____ SHIP VIA _____ USED ON _____ FORECAST SHORTAGE _____

PRODUCTION DEPT.

APPROVED _____ Signed _____

Form 474-F 1M Sam 9-46A

Material Requisition. This is used for production materials.

Form 814-S 1M Sam 10-41A

THE IMPERIAL BRASS MFG. CO., Chicago Date

PURCHASE DEPT. ADVICE **Return Goods No.** 3661

RETURNED TO _____ (SUPPLIER)

AT _____ (ADDRESS) (CITY)

THE FOLLOWING IN DEPT.

QUANTITY	DESCRIPTION	PRICE
	INCOMING CHARGES	

REASON FOR RETURN

SUPPLIED ON OUR P.O. No. _____ REQ. No. _____

SUPPLIERS ORDER No. _____

PRICED BY _____

WRITTEN BY _____

AUTHORIZED BY _____

REPLACEMENT WANTED

" REQUISITION MADE

" " No.

" ORDER No.

SEND THIS COPY TO PRODUCTION OFFICE AT ONCE

Mr. Burnet states that the "Return Goods" form is a "splendid form". Three copies are sent to the Production department, one for attachment to the goods being returned. A fourth copy is sent to the accounting department.

Complete Paper Work –from One Writing!

Read how sales orders, invoices and labels are produced on the Mimeograph brand duplicator from a single Mimeograph brand stencil by chemical company

It sounds amazing—but it's one hundred per cent true:

A one-writing system is the complete paper work system for the Cook Chemical Company, Kansas City, Missouri.

Sales orders, invoices and labels (as the flow chart shows) are duplicated for each order from one form-topped Mimeograph brand stencil. Invoice dates and price extensions are added to the stencil after the sales order copies and labels have been run. Four copies of the order, five copies of the invoice, and from one to one hundred labels are required for each order—and the Mimeograph brand duplicator produces them all!

Former procedure called for at least three writings on each order, with tags and labels in addition. (Only four labels were typed at one time with carbon paper.)

Major advantages of the new system are:

1. Only one typing required—time and labor costs reduced materially.

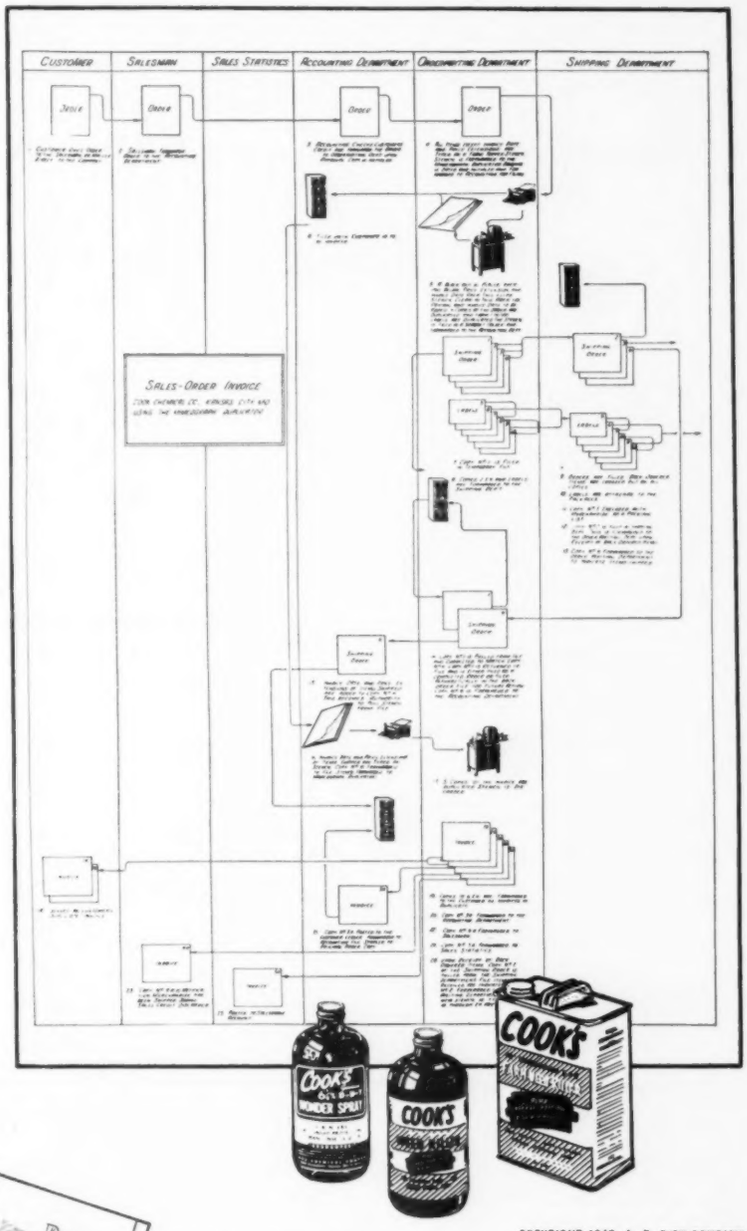
2. Variable quantities of labels and tags produced in the specific number required—no waste—minimum of time and labor.

3. Only one proofreading required—all copies are identical.

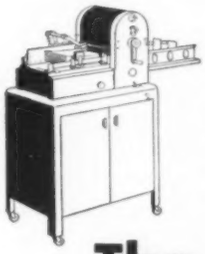
4. Easy-reading, nonsmudging black-and-white copy—stays legible during shipment with Mimeograph brand hard-set ink.

Unusual? Not at all.

This case history is typical of the work Mimeograph brand duplicators and our trained duplicating experts do for companies large and small. We are ready to help you on your own problems. Just call the nearest distributor—or write us direct.



COPYRIGHT 1947, A. B. DICK COMPANY



FREE! Complete case study of Cook Chemical Company paper work system—including the flow chart reproduced above—and sample of the form-topped Mimeograph brand stencil that does the work. It's free! Clip and mail the coupon today.

The Mimeograph brand duplicator

IS MADE BY A. B. DICK COMPANY, CHICAGO

MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Patent Office.

A. B. DICK COMPANY, Dept. P-747
720 West Jackson Boulevard
Chicago 6, Illinois

Send me a copy of your case study of the Cook Chemical Company paper work system.

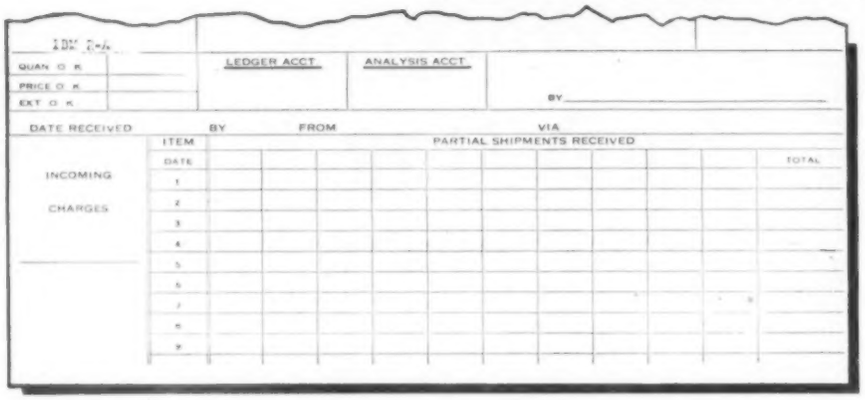
NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

(*Forms Forum, Continued from Page 270*)


IBM Z-A

QUAN. O. K.
PRICE O. K.
EXT. O. K.

LEDGER ACCT.

ANALYSIS ACCT.

BY

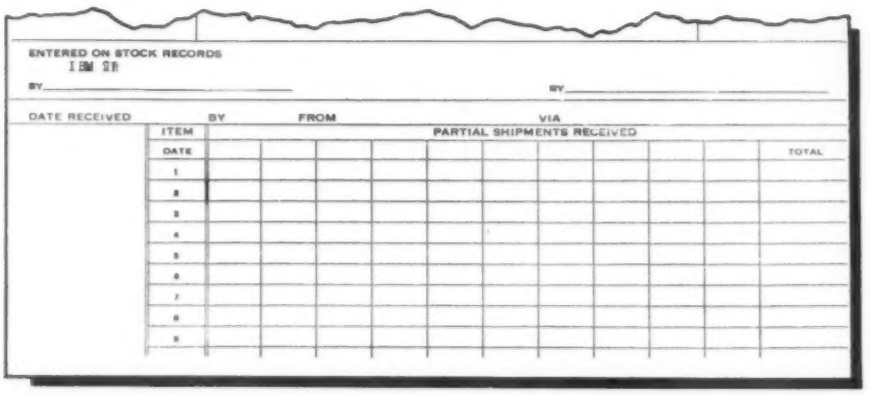
DATE RECEIVED BY FROM VIA

PARTIAL SHIPMENTS RECEIVED

	ITEM											TOTAL
INCOMING CHARGES	DATE											
	1											
	2											
	3											
	4											
	5											
	6											
	7											
	8											
	9											

Form at left appears on Receivings-Accounting copy of the purchase order.

These three forms are on copies of Purchase order which are sent to the Receiving Department for distribution upon receipt of goods.

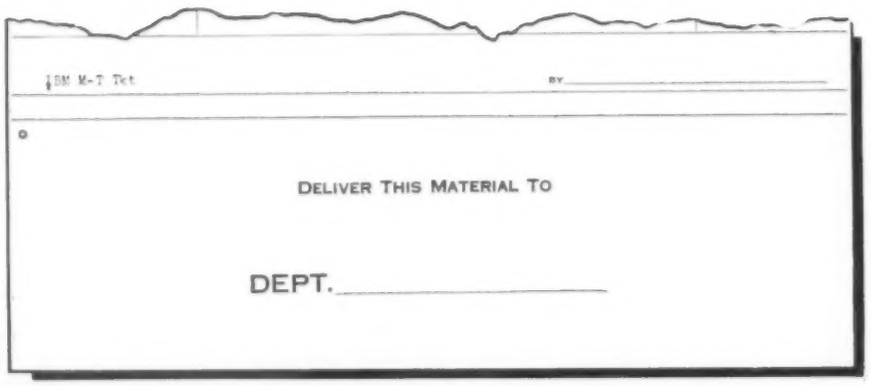

ENTERED ON STOCK RECORDS
IBM SR

BY BY

DATE RECEIVED BY FROM VIA

PARTIAL SHIPMENTS RECEIVED

ITEM												TOTAL
DATE												
1												
2												
3												
4												
5												
6												
7												
8												
9												


IBM M-T Tkt

BY

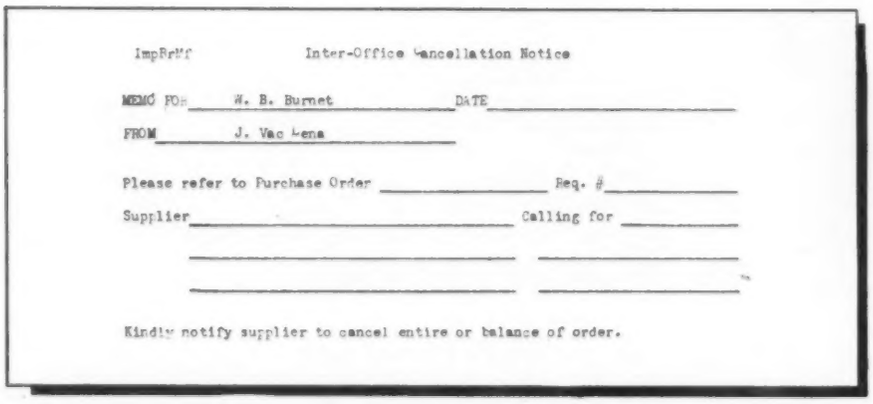
DELIVER THIS MATERIAL TO

DEPT._____

Above: Record form on lower part of Stock Records copy of purchase order.

Left: Material Travel Ticket—copy of purchase order sent to receiving department.

Right: Inter-Office Cancellation Notice, a Ditto form sent by Production to Purchasing.


ImpBrff Inter-Office Cancellation Notice

MEMO FOR W. B. Burnet DATE

FROM J. Vac Lena

Please refer to Purchase Order _____ Req. #_____

Supplier_____ Calling for _____

Kindly notify supplier to cancel entire or balance of order.

(*Forms Forum, Please turn to page 274*)

TO THE *Luckiest Girl in Town...*

THE GREATEST UNDERWOOD THAT ENGINEERING SCIENCE HAS YET PRODUCED!

For more than fifty years Underwood has been *known as Typewriter Leader of the World . . .*

The very first typewriter to give secretaries a front stroke visible writing machine, shift key locks, keyboard right-margin release key and many other operating conveniences.

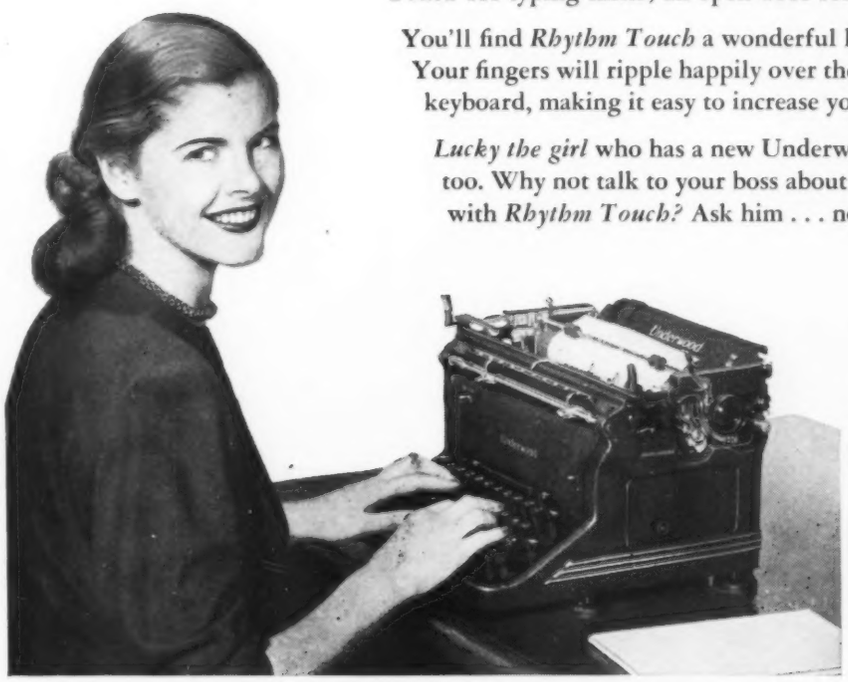
The only typewriter to give you easy-set front margin stops and a time-saving centering scale.

The very last word in typing ease . . . with smooth, speedy and rhythmic key action, and other operating advantages to make your typing more pleasant . . . and to help you get finished on time.

Underwood continues to lead the field . . . and brings you *Rhythm Touch* for typing thrill; an open door for new speed and accuracy.

You'll find *Rhythm Touch* a wonderful help in your typing. Your fingers will ripple happily over the perfectly balanced keyboard, making it easy to increase your speed.

Lucky the girl who has a new Underwood. Lucky you, when you get one, too. Why not talk to your boss about ordering a new Underwood with *Rhythm Touch?* Ask him . . . now!



Your nearby Underwood office will demonstrate this new Underwood with pleasure . . . and sell it with pride.

Underwood Corporation

Typewriters . . . Adding Machines . . . Accounting Machines . . . Carbon Paper . . . Ribbons and other Supplies.

ONE PARK AVENUE NEW YORK 16, N. Y.

Underwood Limited, 135 Victoria St., Toronto 1, Canada

Sales and Service Everywhere

Copyright 1947, Underwood Corporation

Underwood . . . TYPEWRITER LEADER OF THE WORLD

Better Paper

FOX RIVER Fine Papers

Yes . . . because people *do* judge by appearance, "Better Paper — Better Letters", is axiomatic. Note your own reaction to incoming mail. A well appointed letter on crisp, firm paper speaks well for the sender, complementing his message and good taste. Let the finest letterhead paper available — like FOX RIVER cotton fibre paper—represent you and better your letters. FOX RIVER PAPER CORPORATION, 403-G South Appleton St., Appleton, Wisconsin.

Bond, Ledger and Onion Skin Papers

OUR WATERMARK is your quality guarantee

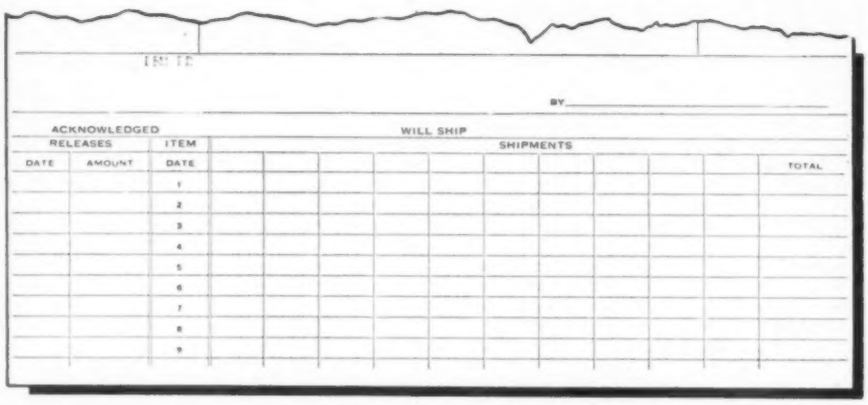
Look *through*---------- the paper... see all three!

1 COTTON FIBRE

2 100 - 75 - 50 or 25% COTTON FIBRE CONTENT

3 MADE "by FOX RIVER"

(Forms Forum, Continued from page 272)



SENT TO

BY

ACKNOWLEDGED RELEASES		ITEM	WILL SHIP SHIPMENTS										
DATE	AMOUNT	DATE											TOTAL
		1											
		2											
		3											
		4											
		5											
		6											
		7											
		8											
		9											

This record form is printed on Purchasing Department File copy, and on Production Follow Up copy of purchase order.

THE IMPERIAL BRASS MANUFACTURING CO.

1200 West Harrison Street
CHICAGO, ILL., U.S.A.

A PRODUCT OF THE LEADER

IMPORTANT

REQUEST FOR SHIPPING PROMISE

SUPPLIER
ADDRESS

ATT:

Address Reply To

PRODUCTION DEPT.

GENTLEMEN:

The following material is required immediately. PLEASE ADVISE VERY BEST DELIVERY DATE.

Order No. **Dated** **Req. No.**

Covering the following items:

Quantity	Item	DESCRIPTION	Date You Will Ship

ANSWER PROMPTLY. Please insert shipping date and return immediately.

Yours truly,
THE IMPERIAL BRASS MANUFACTURING CO.

Production Department

Keep Duplicate Copy for your own records.

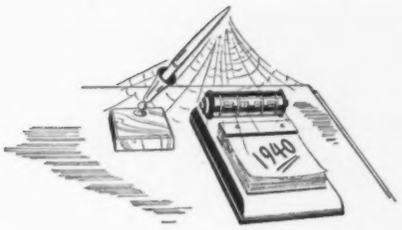
Remarks:_____

Form No. 285 P 10M8/20A

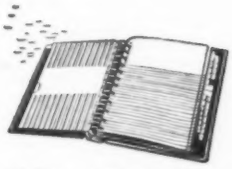
A "Material Requisition" on salmon colored stock, is used by the production department (in duplicate) for production materials, both copies being sent to the purchasing dehpartment, one of which is returned to the originator with supplier's name, order number and date of order.

The "Return Goods" form, which Mr. Burnet states is a "splendid form" is self-explanatory. It constitutes a "Shipping Order" as indicated, and in addition to showing the reason for return of goods covered thereby, indicates whether re-

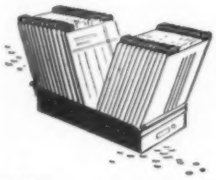
(Please turn to page 276)



1940 was 20 years ago !



FLEX-SITE ... *Visible Binders offer large visible margins for wide range of record sizes.*



V-LINE ... *Posting trays provide automatic working "V" throughout. Eliminate compressors... keep ledgers in order . . . stuff easily.*

TRA-DEX ... *Vertical Visible Files with 3-way visible margins give facts at a glance.*

FLOFILM ... *A self-contained micro-film process. Micro-film can be finished one hour after exposure.*

In office methods, we mean. Busy war plants just couldn't be bothered with the happy-go-lucky systems of pre-war days, when skilled office help was abundant and costs were low.

So methods advanced twenty years almost overnight—card records were put on wheels . . . locked-in ledger sheets were slipped into V-line slots instead . . . dog-eared inactive records were filed in sleek steel containers stacked ceiling-high . . . permanent records were microfilmed and valuable storage space released. All over the office, even out in the plant, record keeping was shifted into high gear!

Today's problems of personnel, of floor space, and of prolific record-keeping are no less acute than those of the busy war years just passed.

Peacetime industry cannot return to a pre-war office overhead schedule.

With so many Diebold modern aids to office efficiency available right now, there is no longer a need to battle growing office overhead costs with outmoded weapons.

Your Diebold Man can quickly bring you important news about fitting the right equipment to the job—rotary, vertical, visible files or microfilm—can show you ways and means to meet your current office problems.

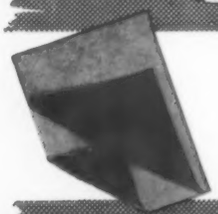
There are Diebold Branches or dealers in all principal cities.

Diebold
INCORPORATED
Canton 2, Ohio

MICROFILM • ROTARY, VERTICAL AND VISIBLE FILING EQUIPMENT • SAFES, CHESTS AND VAULT DOORS • BANK VAULT EQUIPMENT • BURGLAR ALARMS • HOLLOW METAL DOORS AND TRIM

CARDINEER ... *Rotary Card File speeds reference and posting . . . maintains control at minimum cost.*

"OLD DUTCH" PRODUCTS
for Every Duplicating, Carbon and Ribbon Need



WATERS & WATERS BRANCH

St. Louis, Mo. Burlington, N. J.
San Francisco, Cal. Los Angeles, Cal.

(*Continued from page 274*)

placement is wanted. Four copies of this form are made, three of which are sent to the production Office. One of these is for attachment to the goods to be returned. The fourth copy is sent to the accounting department.

The letter-size "Request for Shipping Promise" is sent to the supplier in duplicate, one copy of which is to be returned by him to Imperial Brass.

The inter-office cancellation notice form is prepared in duplicate by the production department, one copy being for the purchasing department. This is a "Ditto" form on half-letter-size sheet.

A Simple Forms System

Purchase Order, Requisition, Returned Material Report, Stock Record Form and Receiving Sheet—Supplied for use in the Forum by F. C. Baldwin, President, Baldwin Supply Company, Charleston, West Virginia

BALDWIN SUPPLY COMPANY
CHARLESTON, KANAWHA CO., W. VA.

SHIP TO

SHOW ALL INVOICES

VIA

Purchase Order
8½" x 10-3/4"

ORDER 64824

SHOW ON SHIPPING TAGS

ORDER NO.

Acknowledge receipt of order, stating when shipment will be made. Show freight allowance on invoice and attach original bill of lading. When transportation charges are prepaid, furnish **PREPAID RECEIPT.** Transportation must be prepaid on all shipments to our branches. All invoices must be **IN DUPLICATE AND MAILED TO US AT CHARLESTON, W. VA.** Our Order Number must be shown on all invoices to prevent delay in passing them for payment.

ORDER Nº 64824

BALDWIN SUPPLY COMPANY

BY_____

Purchase Order: Purchase orders are made in triplicate in the following color scheme: white for vendor, yellow for purchasing department file, and blue for receiving department.

DATE_____ 19____

Nº 1432

DELIVER TO BEARER ITEMS LISTED BELOW AND INSERT PRICES ON COPY OF THIS ORDER

Requisition
Actual size 8" x 3½"

BALDWIN SUPPLY COMPANY

BY_____

Requisition Form. This is used for local purchases, and is prepared in triplicate: white for supplier, yellow copy for checking invoice, and pink copy for purchasing file.

(*Forms Forum Continued on page 278*)

KEEPING AN EAR TO THE GROUND

How can we plan best to meet our customers' paper requirements now and in the future? To have the answers to questions like these, International Paper Company "keeps an ear to the ground."

You can see the results of this policy throughout our entire organization. It helps our woodsmen; it stimulates our laboratory technicians; enables our mills to schedule paper machines sufficiently far in advance; guides our sales staff and distributors in delivery and transporting.

It is International's way of keeping abreast of present and future requirements—with due attention to quality at all times. International Paper Company, 220 E. 42nd St., N.Y. 17, N.Y.

INTERNATIONAL PAPERS *for Printing and Converting*

Old Town

RIBBONS
CARBONS
Duplicating
Supplies

For those who prefer the best

BROOKLYN 17, N. Y.

(*Forms Forum Continued from page 276*)

BALDWIN SUPPLY COMPANY
CHARLESTON, KANAWHA CO., W. VA.

SHIP TO

VIA

Receiving Sheet
Actual size 8¼" x 10-3/4"

SHOW ALL INVOICES

ORDER

SHOW ON SHIPPING TAGS

ORDER NO.

Acknowledge receipt of order, stating when shipment will be made. Show freight allowance on invoice and attach original bill of lading. When transportation charges are prepaid, furnish **PREPAID RECEIPT.** Transportation must be prepaid on all shipments to our branches. All invoices must be **IN DUPLICATE AND MAILED TO US AT CHARLESTON, W. VA.** Our Order Number must be shown on all invoices to prevent delay in passing them for payment.

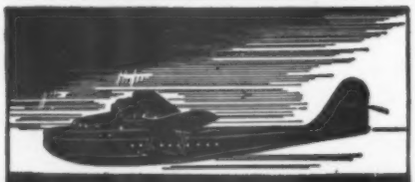
ORDER

BALDWIN SUPPLY COMPANY

BY_____

RECEIVING SHEET

Receiving Sheet. This form is used by receiving department for checking on back orders.



THIN PAPERS
Reduce
TYPING, MAILING
and FILING COSTS
Use
ESLEECK
THIN PAPERS

Fidelity Onion Skin
Clearcopy Onion Skin
Superior Manifold

Esleeck Manufacturing Co.
Turners Falls, Mass.

RETURNED MATERIAL REPORT

BALDWIN SUPPLY COMPANY
CHARLESTON, W. VA.

No. 2216 RG

Actual Size
8¼" x 10-3/4"

To _____ 194__

Via_____

From_____

CREDIT
- ☐ Old Exchange Assemblies
- ☐ Defective
- ☐ Refer:_____

- ☐ Exchange
- ☐ Repair
- ☐ Estimate for Repair
- ☐ Duplication
- ☐ Replacement

Material Returned

Baldwin Supply Co.

By_____

Returned Material Report: This form is made in quadruplicate. White copy is for supplier, yellow for purchasing department, blue for receiving department if material is to be replaced, and pink copy which accompanies material being returned.

(*Forms Forum Continued on page 280*)

You can count on the Remington Rand **Printing Calculator**

for office efficiency

SMART BUSINESSMEN get double value on a single investment when they install the Automatic Printing Calculator in their office. This machine performs *all* the functions of both adding machine and ordinary calculator—figure production is speeded by the compact 10-key keyboard, and positive proof of accuracy is provided by the printed tape. Costs? Estimates? Payrolls? Inventories? Whatever the job, this complete *all purpose* figuring machine will handle it more quickly, more competently. Rely on the Automatic Printing Calculator to bring your office figure work to top efficiency.

Ask your Remington Rand specialist, or write for additional information to Remington Rand Inc., Adding-Bookkeeping-Calculating Machines Division, Department P, 315 Fourth Avenue, New York 10, New York.

***THE ONLY MACHINE THAT**

- ***divides automatically and prints***
- ***multiplies and prints***
- ***adds and subtracts and prints***

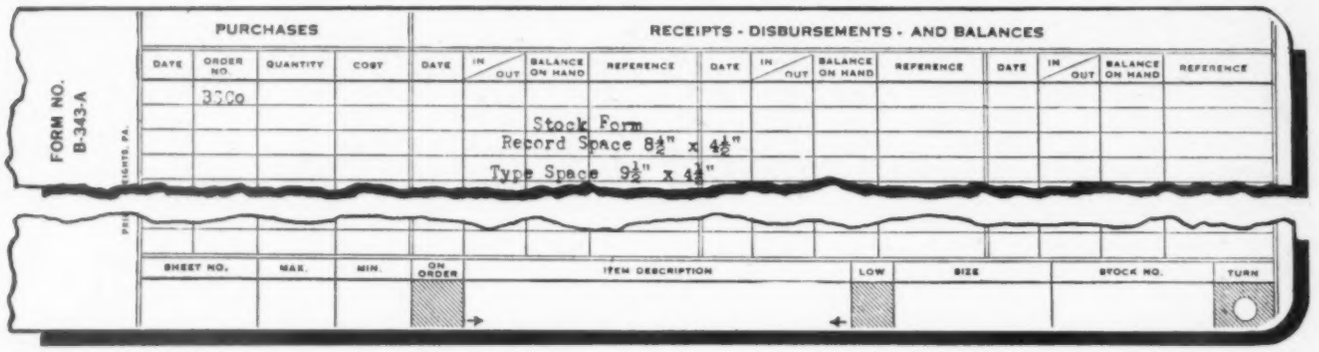
THE PROOF IS ON THE TAPE

BRANCHES EVERYWHERE

Remington Rand

MACHINES FOR MANAGEMENT

(*Forms Forum continued from page 278*))



The Baldwin Supply Company's stock record form is used for keeping record of material in stock, and constitutes a complete record of purchases, receipts, disbursements and balances

PARKER PEN ELECTS NEW OFFICERS

Six new officers of the Parker Pen Company were elected at the Board of Directors' meeting held in Janesville, Wis. following the annual meeting of stockholders.

New company officials elected were: Bruce M. Jeffris, vice-president and treasurer; Norman Byford, vice-president; James N. Black, vice-president; Willis Rabbe, vice-president; Frederick Nymeyer, secretary; and Helen Morrissey, assistant secretary.

Mr. Jeffris formerly held the offices of secretary and treasurer. He is a director of the company. Mr. Byford, formerly managing director of Industrias Chimicas Brasileiras "Duperial," S.A. of Braz'l, is presently managing director of the Parker Pen Company Ltd. of England.

As vice-president in charge of international sales, Byford's dut'es, in general, will be to plan and coordinate all sales activities of the corporation and its subsidiaries and supervise sales of the company and all its subsidiaries in markets other than the U.S. and Canada, according to the Board of Directors.

Mr. Black, general sales manager of Parker since 1939, will supervise the sales efforts of the corporation in the continental U.S., as vice-president in charge of domestic sales. He has been with the company for nearly 20 years.

As vice-president in charge of manufacturing, Mr. Rabbe will have general charge and supervision of all manufacturing operations of the company and will consult with and advise those responsible for subsidiary manufacturing operations, the Board announced.

The new secretary, Mr. Nymeyer, is an industrial consultant and has been a director of the company since May, 1946. His assistant, Miss Morrissey, has been general office manager at Parker's headquarters for many years.

(*Please turn to page 282*)

Weldon Roberts Erasers

No. 900 SUEDE Circular – the typists' favorite soft gray eraser.
No. 9000 SUEDE WHISK – the Suede eraser with new style brush.
No. 120 SUEDE – all purpose eraser for ink and "stubborn" pencil marks; bias beveled for details; broad flat surfaces for cleaning.
900 SUEDE
9000 Whisk
SUEDE 120 Weldon Roberts Eraser Made in Newark, U.S.A.

They Correct Mistakes in Any Language

WORLD'S QUALITY STANDARD

WELDON ROBERTS RUBBER COMPANY
Newark 7, New Jersey

Fine Diamonds

Selections sent for inspection without obligation.

L. & C. MAYERS CO.
Diamond Merchants since 1912
545 FIFTH AVENUE, NEW YORK 17, N.Y.

. . . and it loads quicker, works slicker . . . *because of its Open Channel!*

Chromium body protects the channel against grit and dust to insure clog-free performance. Super-hardened steel, precision engineered to *last a lifetime!*

Load a Swingline stapler with 100% round wire Swingline staples, and you have the speediest, most efficient stapling team for office, factory, school or home.

SWINGLINE STAPLES are 100% round wire, pre-tested to insure rapid-fire penetration and clog-free action in any standard stapler. Look for the red, white and blue box at your stationer's.

Swingline

STAPLES STAPLERS

SPEED PRODUCTS COMPANY, INC., LONG ISLAND CITY 1, N. Y.

...What part of you goes into every envelope?

An indelible impression of the character of your organization accompanies every letter that leaves your desk. See that it is the *right* one. Ask your printer about your letterhead. Paper is his business. We are sure he will call your attention to Rising Parchment.

Rising Parchment

✓100% rag ✓super opaque ✓6 standard sizes of envelopes
✓distinctive unglazed parchment finish
✓four weights

When you want to KNOW . . . go to an expert!

Rising Papers

Ask your printer . . . he KNOWS paper!

Rising Paper Company, Housatonic, Mass.

Never before such **FAST, EASY FILING** portable file with

PENDAFLEX HANGING FOLDERS

The Oxford **"Pendaflexer"**

This new post-war "Pendaflexer" brings you double filing convenience – a handsome, sturdy steel filing cabinet on wheels, plus *hanging Pendaflex* folders.*

Roll the "Pendaflexer" anywhere you need it – that's convenience number one. Then file and find papers instantly in modern hanging Pendaflex* folders–that's convenience number two!

It's a combination that will break every filing and finding speed record wherever used. Get your "Pendaflexer" now–immediate delivery.

Reg. U.S. PAT. OFF

OXFORD FILING SUPPLY COMPANY, INC.
327 Morgan Avenue, Brooklyn 6, N. Y.
Send Coupon for Illustrated Price List

Name.....
Address.....
.....

QUIK-LABELS
CODE CARD SYSTEM

Removable Self-Starter Strip exposes ends of Labels for you to peel!
DON'T PICK. USE SELF-STARTER STRIP TO PEEL LABELS.
FREE SAMPLES
DON'T PICK. USE SELF-STARTER STRIP TO PEEL LABELS.
1 PEEL
2 APPLY
3 IDENTIFY
LIKEWISE ON FLAT SURFACES
*Patents Pending

QUIK-LABELS COST LESS TO BUY-AND-APPLY!

Self-adhesive QUIK-LABEL Wire Markers come in rows on handy cards. QUIK-LABEL'S exclusive Self-Starter Strip automatically exposes ends of labels to grasp instantly. No finger-picking. No ragged edges or tabs to cut fingers and cause slow-downs. More than 500 NEMA markings and color in stock.

Our central location means *faster* delivery on these *faster* wire markers. Your Buy-and-Apply costs for maintenance and production are lower than for any other marker. Attach this ad to your letterhead for FREE sample cards, Price and Stock list.

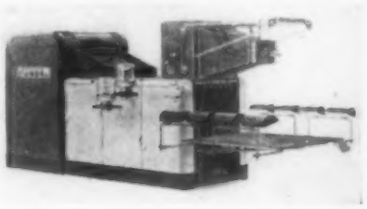
W. H. BRADY CO.
Est. 1914
Identification Specialists
250 W. Wells St., Milwaukee 3, Wis.

ODHNER CALCULATING MACHINES

Ivan Sorvall, 210 Fifth Avenue, New York, N. Y., announces that the Odhner calculators, manufactured in Sweden, are now available. These are portable units of rugged construction that weigh 12 pounds, lever-set and hand-operated. A bank transfer device automatically transfers the result from previous operations to the setting board, saving resetting time.

PHOTOCOPY MACHINE PRODUCES FOUR 18 x 24" PRINTS A MINUTE

Illustration shows the Foto Flo automatic photo copy machine which is said to turn out four 18 x 24 inch completed prints per minute, or six 9 x 12 prints per minute. With four exposures a minute the machine can turn out 16 completed 8 x 10 prints a minute. It copies photographs, drawings, records and documents of various kinds and sizes, and with the aid of a new microfilm projector makes enlargements from microfilm.



Turns out 16 complete prints per minute

The machine utilizes a process used during the war for quickly developing aerial photographs. The machine can take a 1000-foot roll of sensitized paper 18 inches wide. A single operator controls exposure, through developer, hypo rinsing tanks and two-drum single-belt dryer all contained in a stainless steel processing unit.

The machine is 15 feet long, 5 ft. 5 in. wide, and seven feet high. It is made by The Haloid Co., Rochester 3. N. Y.

FIRE-RESISTIVE FABRICS FOR USE IN DECORATING

Non-combustible Fiberglas yarns and flame-proofed cotton yarns have been combined to provide fabrics that offer the style and draping qualities of other quality drapery fabrics without the fire and panic hazards of inflammable materials. The line has been introduced under the name of Plymouth Fire-Guard Fabrics by the Turner Halsey Co., New York city, selling agents for Plymouth Fabrics, Fall River, Mass.

Particularly designed for hotels, schools and institutions, the new fabrics have been approved by the Board of Standards and Appeals of New York city for use in places of public assembly, following a public hearing and standard fire tests. In the tests made by the board, the fabric was brought in

contact with the flame of a Bunsen burner for 12 seconds. No flashing occurred on the lengths of the test specimens. After the flame was withdrawn, the average continuation of flaming usually observed was non-existent. The average continuation of glow at the edge of the area in which the cotton yarns had charred was less than 14 seconds and the glow was confined to the charred area.

The fabrics can be dry cleaned by ordinary processes without losing their fire resistive qualities.

PORTABLE RECORD FILE

New model of Little Hercules Rollaway file is announced by Service Metal Fabricators, 2350 West 58th St., Chicago, Ill. The file is 27 inches high, is fitted with sliding top, and four roller

The Rolaway is 27" high

casters. It is of heavy gauge steel construction with baked enamel finish, spring controlled follower block, guide rod for ordinary folders, and file guides. It is available in olive green finish or silver gray finish.

PAINT ODORS ELIMINATED BY NEW PRODUCTS

Unpleasant odors of fresh paint can be neutralized by use of a series of new products, called Paint-O-Dors, developed by Givauden-Delawanna, 330 W. 42nd St., New York, N. Y. The products impart barely perceptible, yet pleasant fragrances to paints, according to the company's Technical Bulletin 47-1.

Ten deodorants and aromatic mixtures are available. Added by the manufacturer to oil or water paints, enamels and lacquers, the products neutralize and mask the paint odor as the paint is applied and dries. They have no effect on the color, viscosity, drying time, or other qualities of paints. They volatize completely and leave no odor once the paint is dry.

Paint-O-Dors are preferably placed in the vehicle or thinner during manufacture of the paint, but may be added to the finished paint if it is thoroughly mixed to prevent volatilization before the paint is used.

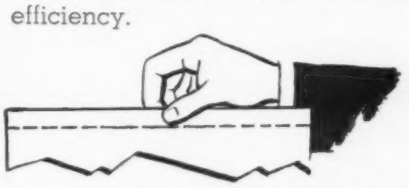
(*Please turn to page* 284)

Specially tailored!

Uniset carbon interleaved business systems are especially tailored to fit the unique and individual needs of any job. They make hard jobs easy and eliminate wasted motions.

There is no limit to Unisets' cost-saving possibilities. Copies and carbons are specifically **tailored** for every job. Special die-cuts and short or narrow sheets make it simple to omit information (in any position) from **any** copy.

Detachable shipping labels—even tags with strings—can be built into Unisets to further guarantee "no strings" on your office efficiency.



Unisets' new, patented pullout perforation speeds easy, clean separation of copies from stub, greatly reducing chances of torn copies. No defacing! No time wasted patching or rewriting! Uniset one-time carbon forms are great aids to typists' speed and disposition.

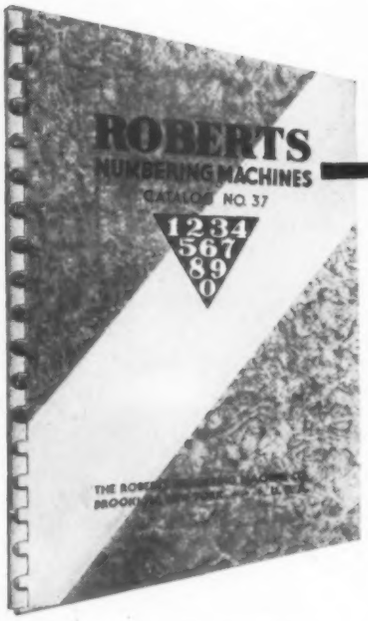
Write today, for "demonstrator" sets—plus information regarding the many ways that Unisets have **simplified** complicated jobs of all types.

UNISETS, The Versatile Business Systems by

The REYNOLDS & REYNOLDS COMPANY • DAYTON 7, OHIO

Established 1866

SALES OFFICES IN MANY PRINCIPAL CITIES



Here are the answers to your numbering problems

No matter what your problem is, you'll find the answer to it in the Roberts Catalog of Numbering Machines. There's a Roberts machine for every office or factory use — hand and typographic machines, machines for stamping and embossing on metal. Consult us on any problem of design.

SEND FOR YOUR CATALOG—NOW!

AUTOMATIC, ALL-PURPOSE MODEL FOR OFFICE OR FACTORY

Up to 11 wheel; 5 movements: consecutive, duplicate, triplicate, quadruplicate and repeat. Dial set, dial locked. Choice of 5 styles of figures. Unconditionally guaranteed.

ROBERTS 95

ROBERTS NUMBERING MACHINE CO.
703 JAMAICA AVENUE • BROOKLYN 8, NEW YORK

UTILIZED by the BUSIEST PURCHASING AGENTS

MacRae's Blue Book

A DIRECTORY OF AMERICAN INDUSTRY . . . FOR ADVERTISING AND BOOK RATES, CALL YOUR AGENCY OR WRITE . . . 26 E. HURON ST., CHICAGO 11, ILL.

POSTER SERVES AS COLOR CHART FOR MONGOL PENCILS

Poster published by the Eberhard Faber Pencil Co., 37 Greenpoint Avenue, Brooklyn, N. Y. explains methods of applying Mongol colored pencils, and at the same time serves as a complete color chart showing a complete range of the 24 colors in which the pencils are available. The 24 colors are shown with identifying pencil numbers.

NEW EDIPHONE ACCESSORY

Known as the "Touch Adjust" Comfortube, featuring light weight and extreme ease of adjustment, new headband introduced by Ediphone Division, Thomas A. Edison, Inc., West Orange, N. J., is a stainless steel wire with "balanced tension" designed to hold the earphones in place with the band in any position—over the head, under the chin, or at the back of the neck. This feature is said to avoid disarranging the operator's hair. The plastic ear-pieces, which have been redesigned to eliminate manually operated set screws and springs, incorporate a friction-type control which permits simple positive finger-tip adjustment.

Earphones can be held in any position

ASKS DECEMBER 31 TERMINATION OF PERSONAL PROPERTY PRIORITIES

Congressional assistance to effect "rapid and efficient liquidation of the surplus property program by removal of priorities on personal property" is urged by WAA Administrator Robert M. Littlejohn.

In letters to Sen. Homer Ferguson, Chairman of the Surplus Property Subcommittee of the Senate Expenditures Committee, and Congressman Ross Rizley, Chairman of the Surplus Property Subcommittee of the House Expenditures Committee, the WAA Administrator asked for legislation abolishing priorities on surplus personal property by December 31, 1947, because:

1. Priorities slow down disposals.
2. Priorities add a considerable sum to the cost of disposals.
3. Priority claimants will continue to decrease in number at a more rapid rate, yet the overhead necessary to service the remaining few will be considerable.
4. Obligations to priority claimants as well as the fulfillment of their legitimate

needs will have been largely met by December 31, 1947.

5. Small business requirements can be met and weighed against the requirement of rapid disposal by administrative handling, such as by minimum and maximum lots, wide offerings and credit terms.

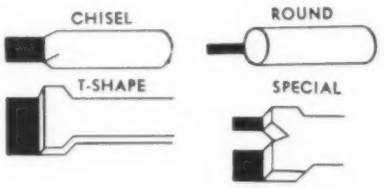
6. Considerable expense will result when disposals are reassumed by owning agencies if they are required to service priorities—the owning agencies do not have necessary machinery for determining prices, issuing catalogs and in other ways conducting sales for priority claimants.

The WAA Administrator advised the Senate and House committee chairmen that priority to the federal goverment should be retained and that real property priorities should remain--except the time fixed by law (90 days) for offering surplus real property to former owners is too long and should be reduced to 30 days.

Administrator Littlejohn advised that such action on the part of Congress "will permit War Assets Administration to satisfy to the maximum degree the obligations made by Congress to the several priority groups" and added that "surplus personal property available after December 31 would be of little interest to priority claimants."

SELF FILLING FOUNTAIN BRUSH

Self filling, leakproof fountainbrush which writes dry with a waterproof ink on any surface, fine or broad lines, in any color, is announced by Petion Prod-



Varied Felt Points are Available

ucts Corporation, 32 Broadway, New York, N. Y. It is styled the Fountain Pen that writes like a brush. Various types of points are available—round, chisel, T-shape, etc., and points in special shapes. The pen is suggested for numerous office uses, such as indexing, ledgers, folders, marking boxes, graphs, charts, labels, files, etc. It also has varied uses in shipping and stock rooms, mailing rooms, art departments etc. Descriptive matter available.

NAMED WESTERN PLANT MANAGER FOR NATIONAL BLANK BOOK

Donald D. Greiner has been appointed plant manager of the Western Division, of the National Blank Book Company, in Chicago. Formerly he was personnel manager. Mr. Greiner will be executive director of manufacturing effort, including planning, scheduling and production

(*Please turn to page* 287)

How to be Popular with Secretaries

Little things can make a big difference to a secretary. Take carbon paper, for example. The patented features of Webster's Micrometric make it unlike all others — and she'll love it. Its numbered scale along the edge takes the guesswork out of spacing a letter or report. And she can remove Webster's Micrometric Carbon Paper cleanly, without touching the carbon surface. It saves a lot of time and trouble.

Micrometric *costs no more* than other high-quality carbon papers.

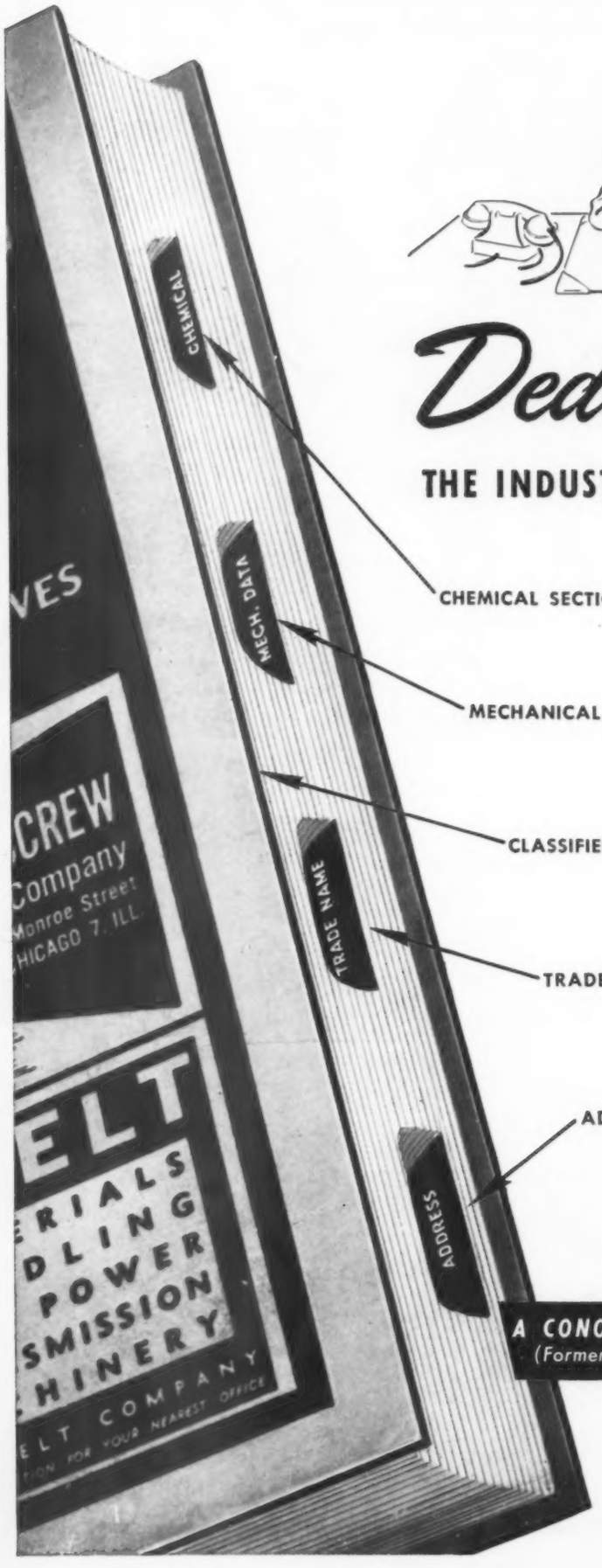
You'll get immediate delivery of Micrometric Carbon Paper—and the complete line of Webster products — from factory warehouses located from coast to coast, or from 1500 Webster dealers. This is a good thing to remember the next time you order carbon papers or typewriter ribbons; duplicating carbon papers and accessories; carbon paper ribbons for photo-offset work; ribbons and carbons for Elliott-Fisher, Addressing, Adding, and International Business Machines. Consult your nearest dealer, or write to F. S. Webster Co., 7 Amherst Street, Cambridge 42, Mass.

Better buy...

WEBSTER'S

Micrometric Carbon Papers and Typewriter Ribbons

PLANT PURCHASING DIRECTORY



Dedicated TO MAKING THE INDUSTRIAL BUYER'S JOB EASIER...

- Comprehensive Industrial Buying Information
- Easy to Read
- Large 4-column Format
- Lies Flat on Desk
- A Single Volume
- Light in Weight
- Easy to Handle
- Easy to Use.

Because PLANT PURCHASING DIRECTORY makes your work easier, keep it right on your desk for ready-reference.

A CONOVER-MAST PUBLICATION
(Formerly Plant-Production Directory)

PLANT PURCHASING DIRECTORY
333 No. Michigan Avenue, Chicago 1, Illinois

(*Continued from page* 285)

of various National items. Prior to joining National at Holyoke, Mass., in 1944, Mr. Greiner was affiliated with the Worthington Pump & Machinery Corp. and also the Endicott Johnson Company.

The San Francisco office of the National Blank Book Company is now located in the Humbolt Bank Building.

VISIBLE RECORD KEEPING SYSTEM

Complete systems control of any and all records is claimed for new Vue-Fax visible record keeping system, announced by Federal Business Products, Inc., 90

House up to 9000 records

Gold St., New York, 7, N. Y. Units range from a small Handi-File with a capacity of 2,400 to large Porto-Files that house up to 9000 records. Three margins feature permits complete overall vixibility and facilitates location, reference, posting and signaling by the operator. Printed matter available.

COPYHOLDER FEATURES "ANCHOR" FOR WIDE SHEETS

Adoption of an "anchor" for wide sheets at the upper left side of the paper-holding feature, is announced by the Copy-Right Manufacturing Co., 53 Park Place, Department P, New York, N. Y. This is spring-tension, rubber-tipped anchor which operates independently of the individual paper grippers released by handle. The device is said to enable the typist to easily and quickly line up sheets in a straight position all the way across before letting down the paper grippers which hold the pages in place. It is especially practical for positioning papers that are 20, 25 or 30 inches or more in width. Catalog available on request.

Yes, vacations are fun when you can relax knowing that your office system will function smoothly during your absence. Shepco Flavor Seal envelopes give you that assurance of greater efficiency in your inter-office correspondence file, and order routine. The Shepco line ranges from job tickets to pay roll envelopes. Write today for information on the dollar saving value of the famous Sheppard form envelopes.

You can TASTE the difference!

Sheppard
ENVELOPE CO.
One Envelope Terrace • 'Phone 2-4674
WORCESTER • MASSACHUSETTS
COPYRIGHT BY THE SHEPPARD ENVELOPE COMPANY

PERSONALITIES in the NEWS

T. M. Haddock has been named Eastern district Purchasing Agent for the American Steel & Wire Co., subsidiary of United States Steel Corp. Mr. Haddock will have his offices in Worcester, Mass. **Otto C. Langenhan** has been appointed acting district Purchasing Agent in Cleveland, O.

Woodrow W. Carruthers has succeeded the late Arthur C. Goodwin as Purchasing Agent for the Cone Mill group, Greensboro, N. C. Mr. Carruthers started in the purchasing department as a clerk in 1929, and was made assistant purchasing agent in 1941.

James W. Willard, Purchasing Agent for the Radio Condenser Co., Camden, N. J., was recently elected president of the Rotary Club of Camden.

E. J. Plato, recently returned from nearly seven years' military leave, has resumed his post as City Purchasing Agent of Sacramento, Calif. Connected with the state selective service office during most of his duty, he achieved the rank of full colonel. William J. Robbins was acting purchasing agent during Col. Plato's absence.

Charles D. DeBruler, formerly assistant Purchasing Agent at Purdue University, has resigned to accept an appointment as Purchasing Agent for Smith College, Northampton, Mass. Mr. DeBruler, a graduate of the Indiana University School of Business Administration, came to Purdue in 1934.

C. M. Taylor, for a number of years Assistant Purchasing Agent of Cities Service Oil Co., and Empire Pipe Lines Co., with headquarters at Bartlesvillle, Okla., has been promoted to Purchasing Agent. Mr. Taylor is an active member of the Tulsa association and is vice-chairman of the Oil Company Buyers Group of the N.A.P.A., for the association.

H. W. Lemmon, formerly glass manager of Pittsburgh Plate Glass Co., Houston, Tex., has been named paint manager for the company, in which capacity he will also be in charge of purchases. He succeeds H. Moussa, who has joined the A. C. Horn Co. of Texas. Mr. Lemmon is a graduate of the University of Houston, and vice-president of the Houston chapter of the Producers Council.

W. N. Springer has been appointed company Purchasing Agent for E. C. Atkins & Co., Indianapolis, Ind., advancing from Assistant Purchasing Agent, which post he had held since 1941.

Mr. Springer started with the company at the age of fourteen and remained with it in various capacities, both in the factory and the office, for ten years. He left the company for a short time and was with the accounting department,

W. N. Springer

freight division, of several of the principal railroads in St. Louis, Florida and other points.

He rejoined the company in 1916 in charge of the large factory stock room where all purchases were received and routed. In 1930 he was transferred to the supervision of raw materials, and was chief clerk in the purchasing department until 1941.

Joseph A. Ashwell has been reappointed Director of Purchases of the New Departure division of General Motors Corp., as part of the general staff recently announced by Milton L. Gearing, new general manager.

A. D. Moss, retiring as Director of Purchases of the B. F. Goodrich Co. after 48 years of service, was tendered a testimonial dinner by officials representing 75 supplier firms, June 4 at the Biltmore Hotel, New York. Among the guests were David M. Goodrich, chairman of the board, and John L. Collyer, president of the B. F. Goodrich Co.

D. L. Brandon has been named Assistant Purchasing Agent of the refrigerator division of Philco Corp., Philadelphia, Pa.

Fred Bradley, a past president of the Purchasing Agents Association of Dallas, Tex., and assistant treasurer and Purchasing Agent of the Southern Union Gas Co., has been appointed general convention chairman of the Southern Gas Association. He will appoint all committees required to plan the association's 1948 convention.

O. D. Story, regional staff, Shell Oil Co., Houston, Tex., will coordinate all purchasing-stores functions for exploration and production activities in the east-of-the-Rockies territory, according to a recent announcement. H. A. Shanks will head the purchasing-stores division in Midland; A. J. Clark in New Orleans; C. G. McLaren in Tulsa and E. J. Ehinger in Houston.

Mr. Story, who has been with Shell 25 years, is a past president of the Purchasing Agents Association of Houston; immediate past vice-president and member of the Executive Committee, National Association of Purchasing Agents, and national vice-chairman of the N.A.P.A. Oil Company Buyers' Group.

Robert H. Binkerd has been transferred from the New York city office of the American Locomotive Co. to become Purchasing Agent of the company's Alco Products division with headquarters at Dunkirk, N. Y.

E. F. Hinkle has been named Director of Purchases for the Automatic Canteen Co. of America, Chicago, Ill. He was formerly with Hershey Chocolate Corp. as sales promotion manager.

Guy G. Mimms has been appointed the first City Purchasing Agent of San Jose, Calif. Mr. Mimms took over the duties of setting up and heading the city's newly created purchasing department on June 1, when the ordinance creating the department took effect. He was formerly a purchasing agent for Schuckl & Co., Sunnyvale, Cal.

Henry Dersofi, who recently served in various capacities in the purchasing department of American Car and Foundry Co., has been appointed manager of material assembly for the company. Mr. Dersofi joined ACF in 1940.

(*Please turn to page* 290)

Tire-maker rolls up a $4,800 annual saving

A Typical Example of how Sun's "Job Proved" Products Help Industry Produce More for Less

A manufacturer employing a large percentage of GR-S rubber in the fabrication of airplane tires used pine oil and an ordinary petroleum product to soften the synthetic during processing. Following this, it was necessary to cement the plies together.

While testing Sun's Circosol-2XH—specially developed for GR-S—it was found the cementing step could be eliminated because of the increased tackiness of the plies. Fewer wrinkles appeared, and the number of rejects was reduced.

The company has now standardized on Circosol-2XH, permitting the elimination of the entire cementing step. This is saving approximately $400 a month in labor costs alone.

Similar results are being obtained in many industries where Sun Engineers and Sun "Job Proved" products are at work. In textile mills, power plants, mines, quarries, factories, machine shops . . . throughout industry . . . you will find Sun "Job Proved" products are helping America to produce more for less. For details as to how Sun can help *your* business, write Department PU-7.

SUN OIL COMPANY • *Philadelphia 3, Pa.*

In Canada: Sun Oil Company, Ltd.—Toronto and Montreal

SUN INDUSTRIAL PRODUCTS SUNOCO

(*Continued from page 288*)

E. R. Askins was recently appointed Assistant Purchasing Agent for the Consolidated Supply Co., Picher, Okla. He was formerly with the Ozark Mountain Distilling Co., Joplin, Mo.

Frank Quinn, who has been secretary of the Purchasing Agents Association of Syracuse and Central New York for the past eight years, and for the past five years purchasing agent, Easy Washing Machine Corp., Syracuse, N. Y., and also editor of the Central New York Purchaser, has left purchasing and is now associated with Richard B. Ferris in the partnership of Ferris & Quinn, Syracuse, manufacturers' representatives. Present representation includes the Cleveland Cap Screw Co., Defiance Automatic Screw Co., Butcher & Hart Mfg. Co., Master Products Co., and Bardwell & McAllister, Inc.

Merle Elvin Miller has been promoted to the post of Manager of the Industrial Purchasing Department of the George Worthington Co., Cleveland, O.

William W. Spruance has been appointed Purchasing Agent for Levy Court, Wilmington, Del., succeeding Joseph Wheelock, who has retired to go into private business. Mr. Spruance served as assistant chief clerk of the House during the 114th General Assembly. During the war he was with Air Transport Command and rose to the rank of major.

Alber Schiffers, Jr., Purchasing Agent for Union Tank Car Co., Chicago, Ill., was recently reelected treasurer of the Western Railway Club.

C. M. Jacobs has been appointed Assistant Purchasing Agent for the Dumore Co., Racine, Wisc. R. E. Thomas is Purchasing Agent. Mr. Jacobs who was with the Dumore production and cost department from 1933 to 1941, and recently with the Hamilton Beach Co., replaces Willie Thomsen, who is being transferred to a similar capacity with the Greene Manufacturing Co. of Racine, a subsidiary.

F. O. Dutton, formerly manager of the Martins Ferry, Ohio, division of the Blaw Knox Co., has been appointed Purchasing Agent for the Easy Washing Machine Co., Syracuse, N. Y.

Frederick Schmidt, Vice-President and Purchasing Agent for Olympia Brewing Co., has been named president of Western Metalcraft, Inc., of Olympia, Wash.

W. H. Slater, mechanical engineer and formerly a plant engineer with Boeing Aircraft Co., has been named Purchasing Agent for Western Gear Works, Seattle, Wash., succeeding A. G. Fidell, who has resigned. Leo A. Saukko, formerly assistant purchasing agent for the company, has also resigned.

Donald A. Breckenridge has replaced Jean Kasper as Purchasing Agent for the Bird Electronic Corp., Cleveland, O.

Albert J. Kuhn, Purchasing Agent for the Huenefeld Co., Cincinnati, O., has been elected Vice-President in charge of Purchasing, and a member of the board of directors.

C. E. Sundstrom has been appointed Purchasing Agent of the Houston, Tex. plant of Rheem Manufacturing Co., following his recent transfer from the Sparrow's Point, Md., plant where he had served as assistant purchasing agent for the past five years. Mr. Sundstrom was with the Bureau of Motor Carriers, Interstate Commerce Commission for seven years and with the Procurement Division, War Department quartermaster corps for a year and a half.

John A. MacCormack has been named by Governor Thomas E. Dewey to the post of State Commissioner of Standards and Purchases, New York state. He succeeds Richard S. Persons who recently resigned. Mr. MacCormack was formerly chief of Public Works Department operations and maintenance.

C. J. Stussey, presently directing purchases for the structural steel and forge division of the DeLaney Co., Houston, Tex., has been placed in charge of purchases for the new oil field division of the company.

Charles O. Auslander has resigned as Purchasing Agent of Michael Reese Hospital, Chicago, Ill., to join the staff of the Joint Purchasing Corp., New York city.

J. B. Bryson, formerly with Puget Sound Power & Light Co., is now Assistant Purchasing Agent for King County schools, in Washington.

L. C. Disser, Ford Motor Company's West Coast Purchasing Agent, has announced that the company's plan for obtaining $50,000,000 worth of additional supplies on the Pacific Coast annually is progressing. Mr. Disser pointed out that the project would require a great deal of long range planning before the objective could be obtained, and would not be accomplished in a short time.

The plan would raise total West Coast procurement to $65,000,000 annually.

Albert J. Browning, vice-president and Director of Purchases for the company expressed satisfaction with the success of the program and supported Mr. Disser's views on the time required. More than 3,000 manufacturers in the area recently expressed interest in becoming suppliers for the Ford and Lincoln-Mercury plants in Richmond, Long Beach and Los Angeles.

George W. Roach, former assistant storekeeper, has been named storekeeper and Purchasing Agent for Grinnell Co. of the Pacific, Seattle, Wash. He succeeds James F. Mellison, resigned.

OBITUARY

George E. Price, Jr., 57, Purchasing Agent for Goodyear Tire & Rubber Co., and associated with the company 25 years, died May 30 in an Akron hospital after a short illness. Funeral services were held in Akron, June 3.

Native of New London, Conn., where he was born December 12, 1889, Mr. Price joined the company's purchasing department in Akron, March 6, 1922, and had been purchasing agent since 1936. He directed the purchasing activities of all Goodyear plants in this country.

When Goodyear built a plant in Wolverhampton, England, in 1927, he spent a year there buying equipment and organizing a purchasing department.

Prior to joining Goodyear Mr. Price was purchasing agent at the Davis Bournville Co., Jersey City, N. J., for nine years. He was a graduate electrical engineer with degrees from Rochester Mechanical Institute and New York University.

George E. Price, Jr.

He was one of the founders of the New York Association of Purchasing Agents, and a charter member of the national association. In 1922 he established the Akron chapter, serving two terms as president, and was later elected national vice president for the Ohio district. In 1940 Mr. Price was elected president of the national association, and later he was active as a member of the organization's Advisory Council and chairman of the Business Survey committee. In 1946 he was awarded the association's J. Shipman memerial medal for conspicuous service.

Mr. Price served in World War I and continued active in military affairs as a reserve officer. He was president of General Dick Chapter, Reserve Officers Association, and later served as vice president for the Ohio district. Early in World War II he served as wartime procurement officer of automotive equipment, Akron, under the Assistant Secretary of War. In 1942 he was ordered to active duty and commissioned a lieutenant colonel in London, England, as a member of the General Purchasing Board, European Theater.

Other affiliations included membership in the First Methodist Church, Akron, the Shrine, University Club, Portage Country Club, American Legion, Rotary Club, and the Quartermaster Association of Washington, D. C.

(*Please turn to page 294*)

SHIELD BRAND VALUES

1. DESIGN

Every proven principle of successful tool engineering is applied in the design of Shield Brand Tools to permit maximum speeds and feeds in production.

2. CONSTRUCTION

The most modern facilities for machining, heat-treating, and testing, plus the use of finest steels in each class of Shield Brand Tools, results in unexcelled uniform quality.

3. COST

The true measure of the cost of a tool is arrived at by the formula (first cost + maintenance cost + cost of lost time due to work interruption) ÷ useful production of the tool. Shield Brand Tools thus measured provide the ultimate in tool economy.

4. AVAILABILITY

Leading Mill Supply Distributors in all manufacturing centers, coast to coast, supply Shield Brand Tools. Our factory stock of over 10,000 items permits the most complete and rapid service to users.

5. KNOW HOW

Our 66 years of experience in supplying Drills, Reamers, Taps, Dies, Milling Cutters and Special Tools to America's leading industries gives us a wealth of information on metal working problems. This is available to all users of Shield Brand Tools, on request.

Send us your tough jobs. We will provide the proper Shield Brand Tool to solve the problem.

STANDARD TOOL CO.

THE STANDARD TOOL CO.

CLEVELAND

Warehouses: New York · Detroit · Chicago

Standardize

HIGHLY DESIRABLE
WIDELY ATTEMPTED

A specific suggestion results in economy

THE SUGGESTION:

Standardize on Shield Brand Drills, Reamers, Taps, Dies, Milling Cutters and Special Tools.

RESULTS IN SAVING:

Saves time in purchasing.
Saves time in stock keeping.
Saves time in the tool crib.
Saves time in setting up work.
Reduces cost in production.

REASONS WHY:

One source of supply—instead of many, with ample facilities to meet all your requirements.

Uniform operating characteristics of Shield Brand Tools.

Low service cost of Shield Brand Tools plus unexcelled service of supply.

Call your Mill Supply Distributor.

STANDARD TOOL CO.

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CLEVELAND

Warehouses: New York · Detroit · Chicago

"First Aid" for figuring COLD FINISHED STEEL PRICES

BLISS & LAUGHLIN, INC.
COLD FINISHED BAR STEELS
Price-a-lator
DIRECTIONS FOR USE
1. Set grade desired in black window opposite arrow at top of slide rule
2. Read in bottom white window directly opposite the size bracket and quality classification desired, the total of extras for grade and quality
BLISS & LAUGHLIN, INC.

Price-a-lator

No need to be confused over Cold Finished Bar Steel Pricing Schedules!

It's all so easy when you use the B&L *Price-a-lator* . . . it works out the answers with slide-rule speed and simplicity.

This handy calculator shows the individual and total chemistry and quality extras for standard carbon grades in various bar shapes, sizes and quality classifications.

Just move the slide to the proper setting and read the total . . . it's quick and it's accurate.

The B & L *Price-a-lator* has been developed as a service to the users of Cold Finished Bar Steel. It is sent on request to those who have practical use for it:—Estimators, pricers, order clerks, purchasing agents, metallurgists, engineers, production men and steel buyers.

Write today for your B&L Price-a-lator

BLISS & LAUGHLIN, INC.

HARVEY, ILL. • BUFFALO, N. Y. • MANSFIELD, MASS.

Sales Offices in all Principal Cities

COLD FINISHED STEEL AND SHAFTING

(*Continued from page 290*)

In addition to his interest in military and civic affairs, Mr. Price was an enthusiastic philatelist, specializing in collections of air mail stamps, first day covers and U. S. commemorative stamps.

Mr. Price is survived by a son, Robert, who is associated with Goodyear's aviation products division in Akron; a brother, Major William T., of Rochester, N. Y., and one sister, Mrs. H. J. Bishop of Philadelphia.

Nathan Alexander, Vice-President in Charge of Purchasing of the American Safety Razor Corp., died June 2 at his home in New York city. He was 46 years old.

Mr. Alexander started as a clerk with the company in 1920 and was appointed an assistant purchasing agent in 1924. He was made purchasing director of the company in 1931, and on May 22, 1945 was elected vice-president.

He was a member of the executive committee of the Purchasing Agents Association of New York, and a member of the national association. He served on many committees of both organizations.

Surviving are his wife Doris, two sons, Leonard S. and Juels, and daughter Iris. Also, his father Noah, and brothers Irving, Edward, Harry and Louis, and a sister, Mrs. A. Katzberg.

Fred Bradley, U. S. Representative from Michigan, and former Purchasing Agent for the Michigan Limestone & Chemical Co., died in New London, Conn. on May 24. He was 49 years old. Mr. Bradley, who was serving his fifth term in Congress, at one time headed the Bradley Transportation Co.

John Cox Morrow, Purchasing Agent for H. H. Robertson Co., Pittsburgh, Pa. died on May 26 after a long illness. He was 64 years old. Mr. Morrow was born in Harrisburg and had lived in Pittsburgh for 38 years.

Charles A. Hester, 56, Purchasing Agent for the Oldsmobile division of General Motors Corp. for the past 20 years, died in Lansing, Mich., on May 21. He was a member of Lansing Lodge No. 196, B.P.O.E; the University of Michigan Club and vice-president of the General Motors executive club. He was a World War I veteran.

AMONG THE COMPANIES YOU BUY FROM

Pittsburgh, Pa.—Jones & Laughlin Steel Corp. The following personnel appointments have been announced: D. W. Thomas to assistant general manager of sales; J. E. Timberlake, to assistant general manager of sales; J. O'H. Anderson, to district sales manager, New York district sales office; S. A. Fuller, to manager, market research department; Howard A. Knox, to manager of sales, tin mill products; C. E. Kendall, to manager of sales, wire products; D. J. Henecker, to manager of sales, wire rope products.

Milwaukee, Wisc.—Wico Electric Co. A new sales office has been opened at 710 Bankers Building, 208 E. Wisconsin Ave. The office will be staffed by Donald G. Forbes, manufacturing division sales engineer, and Orvill H. Tift, trade-sales engineer.

Hillside, N. J.—Ceco Steel Products Corp. A New York district plant and office has been opened here, replacing the plant and district office at Jersey City.

Bridgeport, Conn.—Acme Shear Co. Basil C. Deuschle has been appointed general sales manager, in charge of promoting, merchandising and selling of the complete Acme line of shears and scissors.

New York, N. Y.—Sylvania Electric Products, Inc. Charles A. Burton has been appointed assistant general sales manager of the company's lighting division. He will work directly under B. K. Wickstrum, general sales manager, supervising

Charles A. Burton

national accounts, commercial engineering, U. S. government sales and the Sylvania lighting center. George W. Field and Ralph E. Niedringhaus will head the Central and East Central divisions of the company's sales forces, respectively.

Detroit, Mich.—Baron Steel Co. A new branch sales office has been opened in the National Bank Building, under the supervision of Robert E. Schrag, formerly with the Toledo office.

New London, Conn.—The Whiton Machine Co. Thomas G. Hart has been appointed general sales manager.

Boston, Mass.—Gardner-Denver Co. L. L. Lawrence has been appointed manager of the Boston branch office.

Baltimore, Md.—Vernon H. Craggs, Inc., 330 N. Charles St. has been named representative for the complete line of knives of A. R. Heathcote Co., Ltd., Sheffield, England.

Plainville, Conn.—Trumbull Electric Mfg. Co. Carroll D. Hepler, vice-president of the company, has been placed in charge of all sales activities.

Houston, Tex.—J. A. Zurn Manufacturing Co. Albert A. Sterling Jr. has become district engineer. He was formerly with the Brance-Krachy Co., Inc.

Denver, Colo.—Michigan Tool Co. Vittetow, Inc., 1439 Detroit St., is exclusive representative in the states of Colorado, Utah and Wyoming.

Latrobe, Pa.—Vulcan Mold and Iron Co. C. F. Moersch, Jr., has been appointed sales engineer. He was formerly with Vanadium-Alloys Steel Co.

Los Angeles, Calif.—Alloy Steel Products Co. E. H. Vockrodt, 3757 Wilshire Blvd., has been named Pacific Coast representative.

Chicago, Ill.—Signode Steel Strapping Co. Lester B. Hammersley has been advanced to the post of asistant sales manager.

Rochester, N. Y.—Gibson Electric Co. J. H. Scott, 823 Commerce Bldg., has been named sales representative for the company. His territory will cover Watertown, Binghamton and New York state west of these cities.

Windsor, Vt.—Ampco Metal, Inc. J. B. Ripley Brass Foundry has been appointed licensee for the company, covering Vermont and New Hampshire.

New York, N. Y.—Goodyear Tire & Rubber Co. Donald E. Neese has joined the chemical products division staff and is now sales representative in New York city for the plastics and coatings department.

Cleveland, O.—General Electric Co. George W. Hopkins has become Great Lakes district representative for the company's wiring devices.

Greenfield, Mass.—Threadwell Tap & Die Co. Carl J. Linxweiler has been appointed sales manager.

Everett, Mass.—Monsanto Chemical Co. Howard J. Heffernan has succeeded Dr. Lester A. Pratt as general sales manager of the Merrimac division. Dr. Pratt is now assistant to the division general manager.

Los Angeles, Calif.—Ladish Co. H. L. Pehrson has become West Coast sales manager for the company's forged and seamless welding pipe fittings, with offices at 714 West Olympic Blvd.

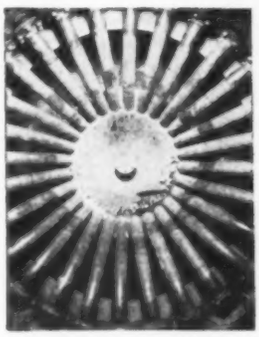
Philadelphia, Pa.—Optimus Detergents Co. William C. Thiess has been named field service representative in the Philadelphia and Baltimore areas.

Detroit, Mich.—Progressive Welder Co. A new sales and engineering office has been established at 578 Maccabees Building, to serve the metropolitan area.

HARPER fastening NEWS

MONEL AND STAINLESS FASTENINGS RESIST CHEMICALS IN EVAPORATOR SERVICE

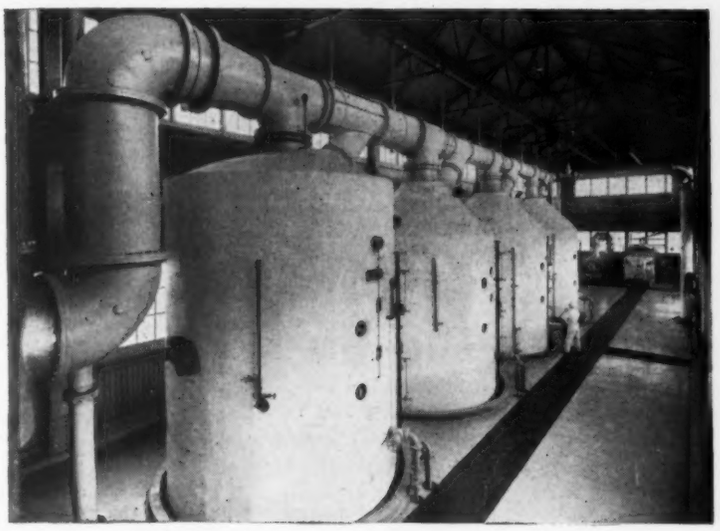
Paper Pulp, Salt, Distilling Industries Save Maintenance Cost



Pulp washer and black liquor evaporator using Harper monel bolts.

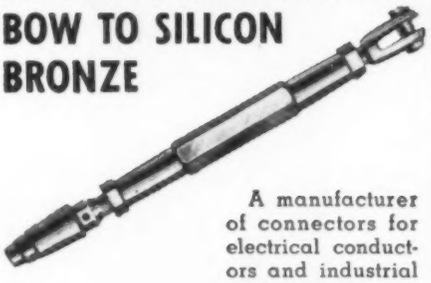
Chemicals ranging from sulphur and alkaline solutions in paper pulp manufacture to acids found in the production of rayon are handled in suitable equipments made by a large evaporator concern. This manufacturer has found that Monel and Stainless steel bolts, rivets and other fastenings, even in evaporators constructed basically of lead, reduce corrosion and provide easy disassembly and reassembly in maintenance and service.

Wherever there is handling of salt, ammonium sulphate, sulphur, alkalies, acids, distillers by-products and many others Harper non-ferrous or stainless steel fastenings can save cost and eliminate breakdown due to corrosion.

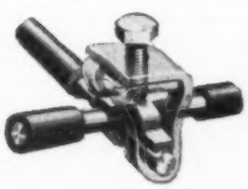


Basket type evaporators in processing of salt use Harper monel and stainless steel fastenings.

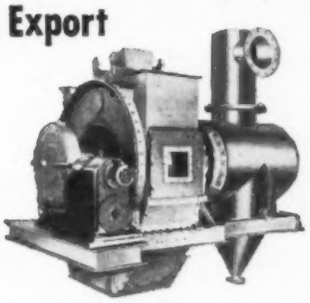
WEATHER AND SEA AIR BOW TO SILICON BRONZE



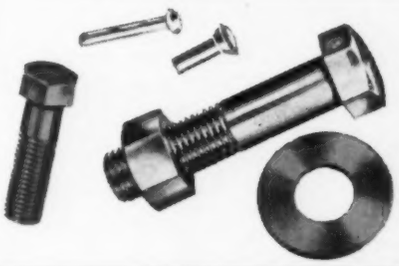
A manufacturer of connectors for electrical conductors and industrial and marine wire rope service specifies silicon bronze for resistance to "season cracking" and atmospheric corrosion. Harper Silicon Bronze nuts and bolts are used on many of these turnbuckles, tap connectors and others to promote long life and low cost maintenance.



Monel Fastenings Reduce Maintenance in Equipment for Export



Equipment manufactured for export and for use remote from servicing facilities requires extra care for prevention of breakdown and excessive maintenance. In a Top feed Vacuum type dryer recently shipped to Australia for use in the sulphate plant of a steel mill Harper Monel Metal fastenings were used to resist the chemical corrosion and promote trouble-free operation.



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HARPER *Chicago*

HARPER SPECIALIZES IN EVERLASTING FASTENINGS

SWEEPING ECONOMIES

with FULLER FIBER BROOMS

OUTWEAR 3 TO 6 ORDINARY BROOMS

True economy in maintenance lies in longer lasting cleaning tools. Actual service tests prove that the Fuller Fiber Broom outlasts 3 to 6 common brooms. The reason is simple. The fibers in the Fuller Broom are selected from leaf stalks of various palms with an average growing span of 16 years. Ordinary brooms, on the other hand, are made from corn-stalks, which have but one growing season. A one season crop obviously does not develop to withstand the rigor of the years.

For further information on the complete line of Fuller cleaning tools for economical maintenance write to . . .

INDUSTRIAL DIVISION

The FULLER BRUSH *Co.*

DEPT. 977 • HARTFORD 2, CONN.

Racine, Wisc.—Young Radiator Co. James A. Stahn has been added to the staff as engineering representative.

New York, N. Y.—General Electronics, Inc. Charles G. Hampson has been named sales manager, in a reorganization and expansion of the company's sales program.

Westerly, R. I.—Bostitch, Inc. Gil B. Richards has replaced F. I. Brown, retired, as general sales manager. Mr. Richards, who has been assistant sales manager since March, 1945, had wide sales experience in executive capacities with a rubber manufacturer and a belting company before joining Bostitch. Ken E. Joy, formerly field manager, has become sales manager.

Gil B. Richards

Schenectady, N. Y.—General Electric Co. R. M. Darrin has been named assistant district manager of the company's Central Station division, New York district. Mr. Darrin came to General Electric in 1919.

Pittsburgh, Pa.—Westinghouse Electric Corp. J. H. Jewell, acting manager of apparatus sales, has been promoted to manager. Mr. Jewell is a veteran of 27 years with Westinghouse and recipient of the Order of Merit, highest honor conferred on employees by the company.

New York, N. Y.—W. B. Connor Engineering Corp. Patrick J. Shea has become associated with the company and will travel extensively in the promotion of Dorex Air Recovery.

St. Louis, Mo.—Vapor Car Heating Co., Inc. Thomas J. Mahoney has been named acting manager of the St. Louis office, replacing E. J. Bryant, retired. John T. Elwood is the new district engineer of the office.

Detroit, Mich.—Metal Carbides Corp. Two new sales engineers, R. M. Lindgren and Paul E. Dimling, have been appointed, with offices at 6432 Cass Ave. They will cover Michigan and the Detroit industrial area.

Niagara Falls, N. Y.—The Carborundum Co. Clarence E. Hawke has been appointed director of domestic sales. Mr. Hawke has been associated with the company for over thirty-seven years, both in this country and abroad.

Wilmington, Del.—Dairy Products Division of the Paper Makers Chemical Department, Hercules Powder Co. Earl H. Cone, Jr., has succeeded the late Harold M. Johnson as manager of the division.

New York, N. Y.—The Taft-Peirce Manufacturing Co. Joseph N. Tellier has taken over the duties of New York sales manager from E. B. Capron, who has retired.

Cleveland, O.—Ohio Equipment Co., Inc., representing The Yale & Towne Mfg. Co. Charles F. Yarham has been added to the sales engineering staff. His territory will include Cleveland and suburbs, west of the Cuyahoga River, and such industrial centers as Lorain and Sandusky.

Philadelphia, Pa.—American Engineering Co. Vernon A. Olson has joined the company as sales engineer in the marine department.

Chicago, Ill.—General Electric Co. Floyd M. Shumway and R. S. Oschner have been named North Central district representatives of accessory equipment products, and tungar and metallic rectifiers, respectively.

Los Angeles, Calif.—The Carpenter Steel Co. A new warehouse and office, servicing West Coast users of tool, alloy and stainless steel, has been opened at 1939 E. 16th St. D. J. O'Neil is manager.

Bridgeport, Conn.—General Electric Co. Homer A. Rawson has been made sales manager of the company's lighting components. He was formerly accessory equipment representative for the North Central district, with headquarters in Chicago.

Minneapolis, Minn.—Vascoloy - Ramet Corp. W. T. Fink, president of Form Products Co., has been appointed distributor in the Minnesota area. He will be assisted by George Jalma, VR service engineer and factory representative in developing a complete stock and service.

W. T. Fink

Detroit, Mich.—Eaton Manufacturing Co. Three new Michigan divisions, replacing the former Wilcox-Rich division, have been established with sales, engineering and research departments located in Detroit. They are: the Valve Division, the Pump Division and the Saginaw Division.

(*Please turn to page* 298)

"RAISED-LAY"*

The *NEW* material for Electrical Bar Contacts

This *new* material consists of one or more strips of precious metal bonded to the base metal in the form of a ridge or bar.

This *new* method of lamination provides a great advantage to manufacturers of many contact assemblies, in that an arm or leaf can be blanked out with the contact already attached. The precious-metal ridge constitutes a bar-shaped contact.

By specifying the width and height of the precious-metal strip, any electrical current requirements can be met. Costly assembly operations are reduced to blanking costs. The precious metal that was wasted in the shank of a rivet can be saved.

We have standardized on a number of strip widths and thicknesses for both single, double and double-double combinations in "Raised-Lay." We are also prepared to furnish contact material in the form of "Inlay," "Edgelay," and "Overlay." In addition to supplying these materials, we offer a blanking service to your specifications.

Your inquiries are cordially invited.

*Patents applied for covering both the material and the method of manufacture.

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D. E. MAKEPEACE COMPANY

Main Office and Plant, ATTLEBORO, MASSACHUSETTS

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LAMINATED PRECIOUS METALS
SHEET • WIRE • TUBING
FABRICATED PARTS AND ASSEMBLIES
BAR CONTACT MATERIAL
PRECIOUS METAL SOLDERS

What type of STAINLESS FASTENER do you need?

Prompt delivery from the largest stock in the nation!

Screws . . . nuts . . . washers . . . pins . . . Allmetal carries the largest stock in the country of stainless steel fasteners and screw machine parts. We also have facilities for heading, tapping, drilling, reaming, slotting, turning, stamping, broaching and centerless grinding . . . and we work not only with stainless and monel, but also with duralumin, aluminum, brass, bronze, or any other non-corrosive metal. All parts produced to close tolerances. Write for our catalog today. Allmetal Screw Products Co., Inc., 33 Greene St., New York, 13.

Send for FREE CATALOG

This new, 83-page catalog helps you select the correct size and type of non-corrosive fastening device for any particular job. Includes stock sizes, specials that can be made, engineering data, etc. Make request on company letterhead.

Write to Department PG

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SCREW PRODUCTS CO., INC.
33 Greene Street, New York 13

SPECIALISTS in
STAINLESS FASTENERS

Rochester, N. Y.—Ampco Metal, Inc. The company has appointed the Anstice Co. as agents in Western New York to handle sale of all products except resistance welding and arc welding electrodes. The John C. Fitzpatrick Co., Toronto, Can., has been named sales agent in the Province of Ontario, handling all products except safety tools and arc welding electrodes.

Massillon, O.—Reliance Division of the Eaton Manufacturing Co. Edward J. Helline has been named general sales

Edward J. Helline

manager. He has been with the company for 28 years, and for the past three years was in charge of Snap Ring sales engineering and production.

New York, N. Y.—Goodyear Tire & Rubber Co. T. Rivers O'Brien, manager of the company's New York crude rubber office has completed 25 years' continuous service with Goodyear. Presentation of a diamond-studded service pin and the company's cash award was made by J. J.

T. Rivers O'Brien

Blandin, vice-president of Goodyear Rubber Plantations and manager of the crude rubber division, Akron, O. Mr. O'Brien is widely known as an authority on rubber grades, and supervised the training of many of the company's staff now in the Far East.

Baltimore, Md.—Koppers Co., Inc. John A. Worthington has been named general sales manager of the company's piston ring division. He is a graduate of St. Johns College and Johns Hopkins University night school, and joined the Bartlett Hayward Co., now a division of Koppers, in 1916. T. Latimer Ford, who has been with the company or its affiliates since 1908, will head up a new company department devoted exclusively to replacement sales.

INDUSTRIAL DEVELOPMENTS

Package Machinery Co., has changed its address to East Longmeadow, Mass.

General Electric Co. has begun operations in a new plant at Anaheim, Calif., for the manufacture of Glyptal alkyd resins, used in paints, enamels and other surface finishings.

Waterous Co., St. Paul, Minn., has purchased the Thomson Pump line from the Thomson Pump & Equipment Co., Los Angeles, Calif.

Pittsburgh Steel Co. has acquired the Johnson Steel & Wire Co., Inc., Worcester, Mass., as part of a program of expansion into the finished products field. The Johnson company manufactures high carbon wire.

Swift & Co. has begun construction of a fats and oils processing unit at Hammond, Ind.

Faraday Electric Corp. has announced the removal of the Stanley & Patterson division Boston plant to Adrian, Mich., where the main Faraday plant is located. Stanley & Patterson manufacture fire alarms, hospital and other signal systems.

Garden City Plating & Manufacturing Co., beginning its 50th year in business, has moved into a new plant at 1750 North Ashland Ave., Chicago, Ill.

Hercules Powder Co. will sell its water-dispersible wax emulsions for the paper industry in Canada under the name "Paracol". The product was formerly sold under the trade mark "Aquapel".

Ace Plastic Novelty Co. has opened a new plant at 91-30 Van Wyck Blvd., Jamaica, N. Y.

Nelson Electric Corp., 1620 Euclid St., Santa Monica, Calif., a newly-formed corporation, has purchased A. L. Nelson & Co., west coast manufacturers of radio transformers.

Varlar, Inc., a division of United Wallpaper, Inc., Aurora, Ill., has begun production on Varlar, a new stainproof wall covering announced to the public early in 1946. The new Varlar manufacturing units is expected to have a yearly capacity of 35,000,000 square feet of wall covering.

E. F. Johnson Co., Waseca, Minn., has purchased the "Speedx" line from the Les Logan Co., San Francisco, Calif., including bakelite and metal hand keys, high speed semi-automatic keys and practice sets and buzzers. The line will be manufactured at Waseca.

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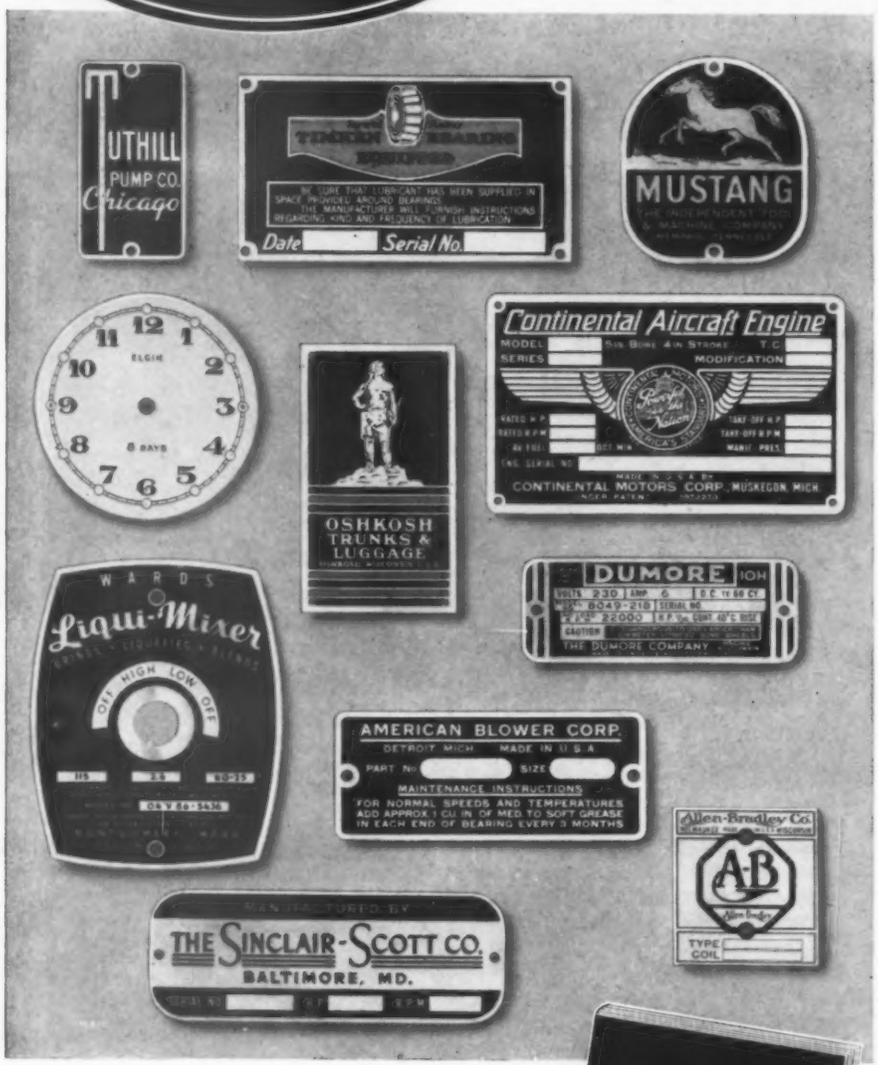

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Paper Supply Nearing Balance

(*Continued from page* 126)

I don't expect for a minute that you aren't going to do your utmost to bring prices down. If you succeed then it will mean that over-all costs are going down—and that would be welcome news for every producer in this country.

Therefore, barring a major recession, I do not expect any major softening in paper prices. Certain recent adjustments have started, as you probably all know, primarily in the board and container field which seems to me more vulnerable than most branches of our industry. It is part of the process of correcting maladjustments, which will continue in our industry just as in others.

To conclude, therefore, while I expect a balance in supply and demand before the turn of the year, I do not expect any major weakness in paper prices. Correction of maladjustments will continue, and it is certainly possible that there will be such adjustments upward as well as downward. Neither do I expect any other major movements in the near future.

* * *

Copper Shortage Is Temporary

(*Continued from page* 123)

per mining industry. This mean that the tariff must be reestablished and maintained at its previous historical level. No reduction must be made by our government in connection with general free or semi-free trade policies.

I believe that where a commodity or a raw material the production of which adds enormously to the national wealth, supports a large segment of the country's population and is the source of millions in taxes, then the industry producing that product is entitled to and should receive tariff protection against the danger of its being closed out or curtailed by the import of cheaply produced foreign commodities or materials. The entire copper mining industry from mine to refinery should be safeguarded in the future because healthy, going mines, mills, smelters and refineries are essential to the national welfare in the event of future world conflict.

(*Please turn to page* 303)

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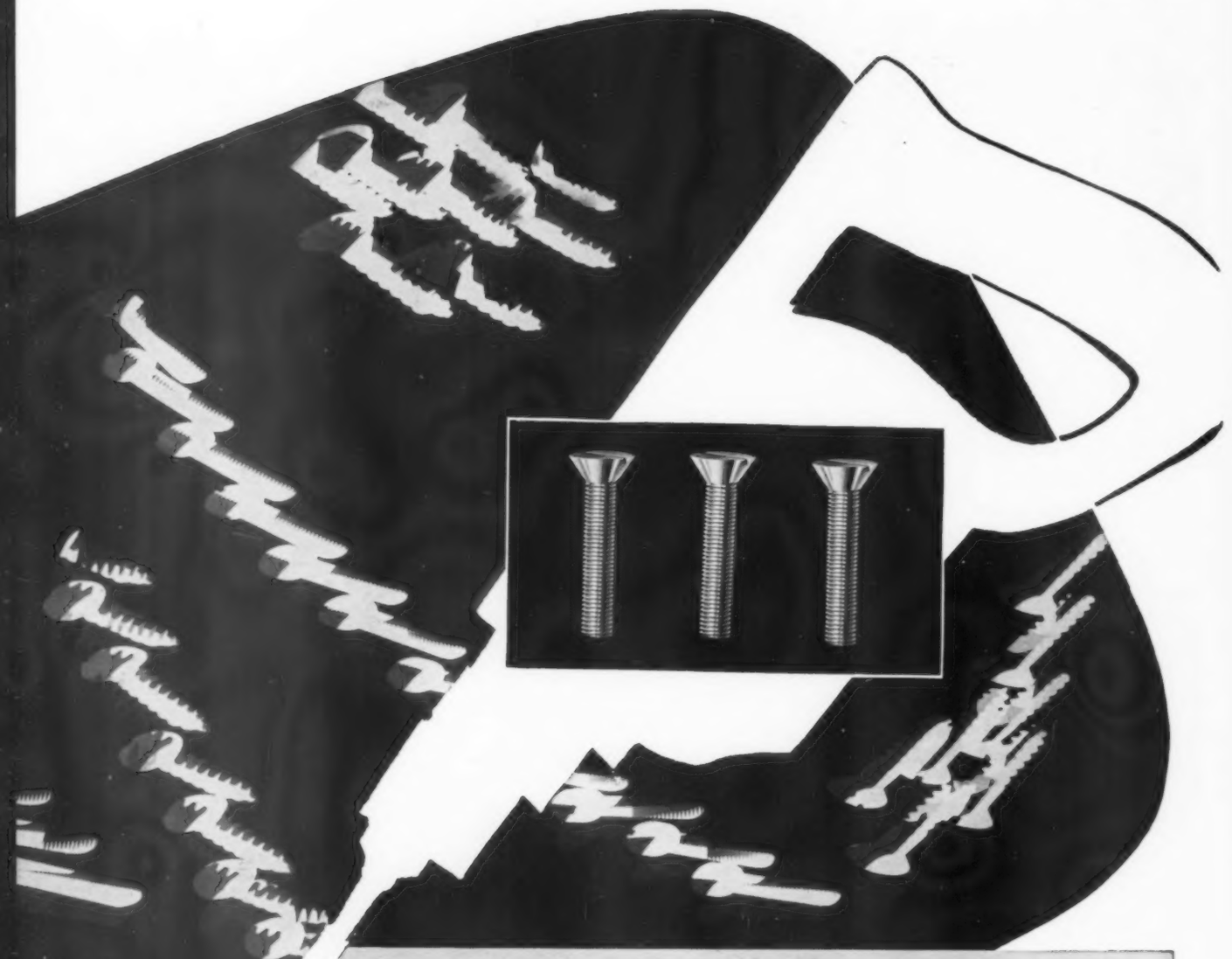

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Copper Shortage Is Temporary

(*Continued from page* 300)

For the best interests of our economy and the copper industry itself now and in the future, the price prevailing today is, in my opinion, too high. Once the present abnormal demand recedes and our own production is in a position to balance our needs, I envision a price which will be reasonable and satisfactory to both producer and consumer, taking the rising cost of production of the last few years into consideration.

* * *

The Lead and Zinc Markets

(*Continued from page* 120)

High Grade metal becomes weaker, this grade will be debased and more Prime Western will thereby be made available.

During 1946, about 105,000 tons of slab zinc were imported into the United States, and 37,000 tons exported. Most of the exports were made in the last half of the year. For the first quarter of 1947, over 33,000 tons of slab zinc were exported from the U. S. A. As the foreign supply becomes more abundant, and it seems to be doing this now, less zinc will move out of this country and, in fact, some metal heretofore shipped from this continent to Europe may seek a market in the U. S. A., and imports for 1947 may exceed the high figure quoted above for 1946.

Producers' stocks of slab zinc were not high on April 30th last but they have increased by about 12,000 tons since February 28th.

I am inclined to feel that, if the premium price is extended, which subsidizes zinc production up to 16½¢ per pound, in comparison with the present market of 10½¢, the zinc price might recede this summer.

For the reasons I have briefly outlined, it seems advisable to watch inventories of lead and zinc even more closely than in the past.

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More Copper Imports Needed

(*Continued from page* 122)

swered. Foreign copper, held in bond, while the question of suspending the excise tax was being debated in Congress, already has been released. Cargoes of copper already are on the seas, consigned to American ports. Chilean copper will arrive as fast as it can be mined and shipped north.

Most of the Canadian production already has been contracted for by England for the balance of the year. However, we can well look to Canada for a future supply of copper for there are literally millions of square miles of unexplored territory in that mineral treasure chest of the north.

If the predicted surplus develops in the African mines, we should enter 1948 with an adequate supply for that year. But Africa is primarily a source of supply for Europe rather than for the United States, and Europe will be copper hungry for years to come. Our great advantage, of course, is that we have the dollars and other nations have not. However, we must base our calculated supply on production in our own hemisphere with Chile as the most likely source of continued supply.

Few of us thought that when the OPA ceiling of 12 cents a pound was dropped a little over a year ago, the price of copper would double in twelve months. Copper has been even higher than it is today. Its peak price, since 1900, was reached in 1917 when copper sold for 37 cents a pound with the average price for the year 29.19. In 1932 copper hit a record low of 4.87½ with the annual price average 5.67. That was the year the copper excise tax was imposed as an emergency measure and as an aftermath to the operations of the international copper cartel.

Stabilization of copper prices is something to be desired by all industry. It is the right of manufacturers to have some advance knowledge of the price of raw materials and such knowledge is vital to the economy of national industry.

It is not probable, barring a depression in this country, that the world price of copper will drop noticeably in the next six months because the world demand for copper is an all-time high. As emergency demands are filled and production increased and the critical need for copper is replaced by a

(*Please turn to page* 306)

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BLAW-KNOX ELECTROFORGED STEEL GRATING

More Copper Imports Needed

(*Continued from page* 304)

more normal demand, we can then look for a levelling off of prices. At present, copper prices are too high and very complicated. We have the foreign price of 24¢, the domestic price of 21½¢, and we even have several sellers of copper selling part of their production at one price and part at another. But the old law of supply and demand operates as inevitably as the law of gravity. What goes up must come down. High prices increase production and decrease consumption. The higher the price, the sooner the cure. In the meantime, for most manufacturers, supply is a far more important factor than price.

We fabricators will do whatever is in our power to establish a fair and stable price for our products. Willing and anxious as we are to produce prices, we find it difficult to revise our price structure downward when the price of our raw materials has doubled within a year, when our labor costs have doubled since 1939. As a whole, manufacturers deserve to be congratulated rather than castigated for the moderation with which their prices have been raised in the face of rapidly increased raw material and labor cost.

* * *

Personal Liability on Company Orders

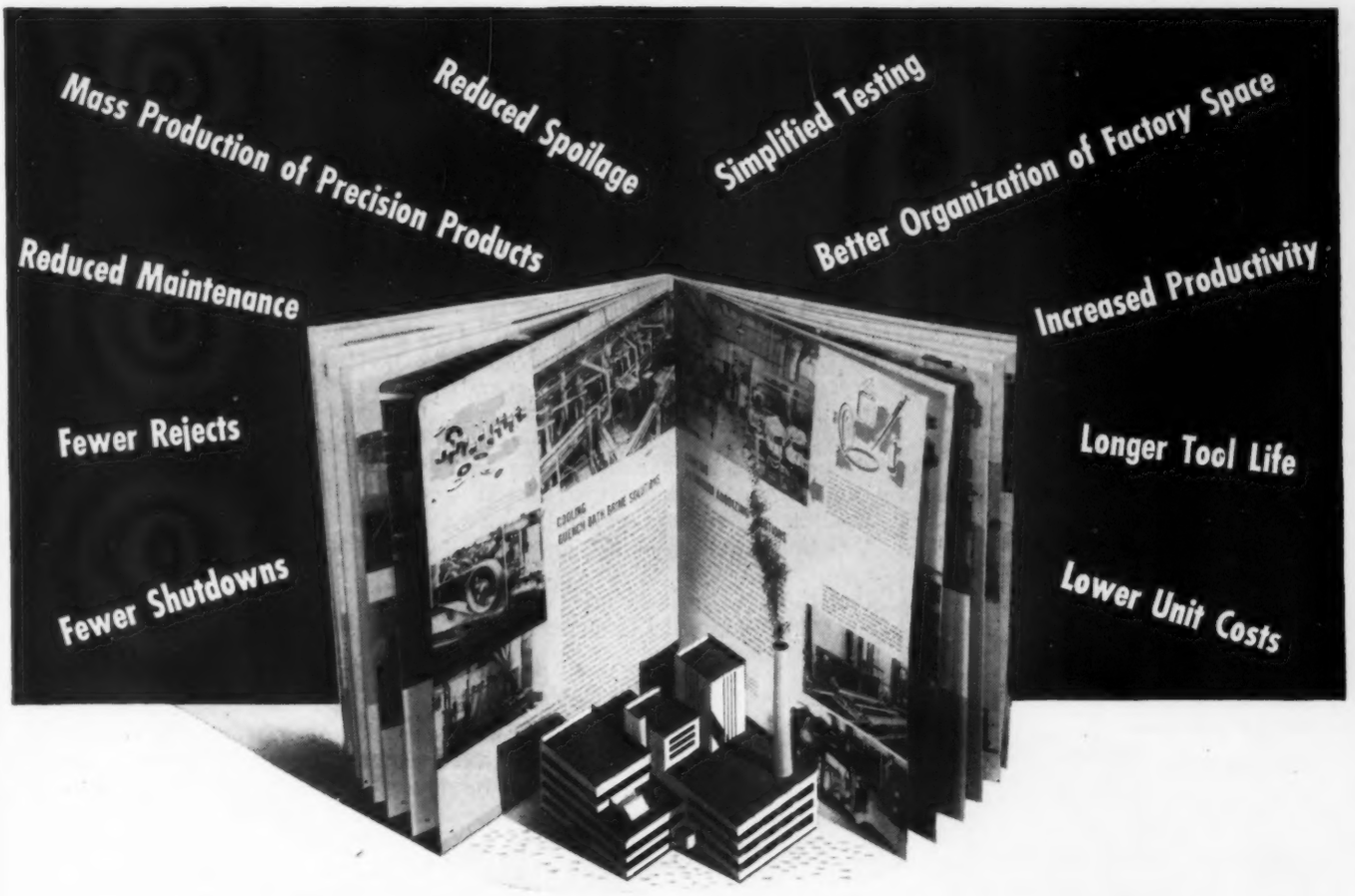
(*Continued from page* 146)

ruary, 1947, the testimony showed facts, as follows: A corporation's board of directors was selected by vote of the stockholders. In later litigation the higher court held that the board had legal right and power to ratify its general manager's employment of attorneys, authorize payment of fees thereto, and direct continued employment. This decision was rendered although it was contended that the corporation could not legally elect the board of directors until a controversy was settled involving the right of certain stockholders to vote.

Ultra Vires

In Religious Films v. Potts, 197 S. W. (2d) 592, reported February, 1947, the higher court held that all corporation contracts are void and unenforceable if beyond the scope of either the express or implied powers of the corporation's charter.

(*Please turn to page* 308)



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Personal Liability on Company Orders

(*Continued from page* 306)

According to a recent higher court although a corporation is *intended* to be dissolved, it remains in existence unless the proper legal procedure is followed to dissolve it.

For example, in a leading case (160 N. E. 434) it was disclosed that a corporation discontinued its business through vote of its directors. About six months later, the treasurer, director, and general manager, who owned all but two shares of stock in the company, reopened the business at another address without authority of the directors. The court promptly held that the operation of the new business was illegal. This court held that the new business must be conducted according to laws regulating the corporation.

New Corporation Liable

Modern higher courts consistently hold that a new corporation is liable for debts of a partnership or other business which is absorbed if there is no substantial change of ownership, nor in the kind of business conducted.

For example, in S. & J. Supply Company v. Warren, 133 Pac. (2d) 201, it was shown that a seller sued a corporation for the contract price of merchandise sold and delivered to it. The latter defended the suit on the grounds that at the time the goods were purchased it was an unorganized entity and a subsidiary of another corporation. However, the higher court held the corporation fully liable for payment, saying:

"When a corporation is merged into or absorbed by another, which continues its business, and where there is no substantial change of ownership, nor in the kind of business carried on, then the new corporation is but the successor of the former concern, and is liable as such for its debts."

Also, see leading higher court decisions, as follows: Lamkin v. Baldwin & Lamkin Mfg. Company, 72 Conn. 57, 43 A. 593, 1042, 44 L.R.A. 786; Ziemer v. C. G. Bretting Mfg. Co., 147 Wis. 252, 133 N.W. 139, Ann. Cas. 1912D, 1275. Skirvin Operating Co. v. Southwestern Electric Company, 71 Okl. 25, 174 P. 1069, 1073. 15 A.L.R. 1104. All of these courts held that a corporation organized to take over the business of a partnership or of an individual may assume the liabilities of the parntership, or the individual, and become liable to the partnership creditors. The assumption may be either express or implied. Therefore, a contract made by an individual or partnership may be enforced against a corporation which subsequently absorbs the individual or partnership business.

Purchasing Agents

Obviously, a purchasing agent may be either a corporation's official, general agent, or special agent. A general agent has broad authority to bind the corporation in all business transactions, relating to the corporation's business, in the department represented by the agent. But a special agent merely is an ordinary employe with limited authority to do only the exact duties for which he is employed.

The only practical exception by which a special agent may act with broad authority of a general agent is where in the past the special agent has been granted unusually broad authority and the one with whom he transacts business knows of this unusual authority. In other words, the exception is found where a party has been led to believe that the special agent actually has the ordinary powers and authority of a general agent. Thus a purchasing agent's assistant, although normally a special agent, may bind the corporation in the role of a general agent if the purchasing agent has in the past given his assistant special or unusual authority. But, of course, this special authority extends only to those parties who know of it. The fact that an assistant is given special and unusual authority, in one instance, does not enable others who have no knowledge of the unusual fact to rely upon the general authority of the assistant to make binding contracts. Nor may he plead it in subsequent suits.

* * *

Political and Economic Factors in Prices

(*Continued from page* 98)

the outlook. Supply and demand, even for the scarce rolled products, will be in balance by the end of the year, even if activity in consuming industries holds up at current levels. I do not believe that activity will hold up at current levels. Consequently, some decline in the steel production rate seems likely, particularly in the fourth quarter of the year, and a reduction in steel

(*Please turn to page* 310)

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Political and Economic Factors in Prices

(*Continued from page* 308)

prices of from $3 to $5 a ton would not be surprising.

Whatever the raw material, the outlook is for a lower price level before the end of the year. In many cases prices have already been reduced; but it would be hard to find any commodity for which it could be said with assurance that no further declines are likely. This factor in the cost of production, at least, is on the down-grade, and the decline promises to speed up later in the year.

Sellers will insist, however, that labor costs are high and that this will minimize any decline in manufacturing products. It is obviously true that wage rates are the highest on record. It can probably be accepted that wage rates will not be cut this time as they were in 1920. However, there should be a careful distinction between wage rates and labor costs. After all, wage rates advanced throughout most of the twenties, but the price trend for manufactured goods was gently downward. The big difference between wage rates and labor costs lies in output per man-hour. This depends not entirely on what labor is willing to give, but also on the energy and ingenuity of management and on the installation of new equipment.

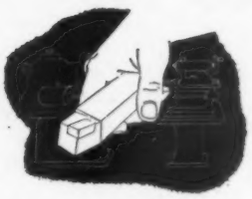
Since the end of the war the slow increase in output per man-hour has been disappointing to many industries. Frankly, I doubt whether anyone can make very good guesses about the trend of efficiency in the next 2 or 3 years. However, it is possible to point out some interesting analogies with what happened after the last war.

Throughout 1919 and into 1920, judging from existing records, there was about the same disappointment with output per man-hour as has been experienced in the last 12 to 18 months. Nevertheless, in the 3 years from 1920 to 1922, output per man-hour increased by about one-third. After an interruption in 1923, there was another increase of about one-third by 1929, and still another between 1929 and 1939. No one knows exactly how rapidly output per man-hour will increase during the next few years.

To sum up:

Current prices are too high. Rising inventories are bound to bring pressure on current prices and production rates a little later this year.

(*Please turn to page* 312)



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93 Years of Precision Manufacturing

Factors in Prices

(*Continued from page* 310)

Political and economic developments abroad are likely to be depressing rather than stimulating to domestic price movements during the next year or two.

Here is our forecast on prices:

1. Wholesale prices reached their peak in March, when the Labor Department's index averaged 149.6.
2. Declines will be gradual for a short time longer, but more rapid during the fourth quarter.
3. Wholesale prices by next Spring will average at least 15% to 20% below the March peak.
4. The decline will be much less rapid than it was in 1920-21, but it probably will take considerably longer to be completed.

* * *

Industrial Textile Fibres and Fabrics

(*Continued from page* 121)

strength when wet or twisted, yet it has attained an enviable volume of approximately 225 million lbs. per year in tire cords and fabrics, which is 25% of total rayon production.

Wool does not have much strength, but it does have excellent resilience and thermal insulation properties.

Fortisan is a very strong (saponified acetate) rayon type yarn with low elongation.

Vinyon has a comparatively low melting point and considerable elongation, but is highly resistant to acids, alkalies, and most chemicals. Therefore it has found substantial use in filter fabrics.

Current production of nylon is approximately 40 million lbs., and it will probably reach 60 million lbs. very shortly. This, however, is only about ½ of 1% of the textile fibres used in this country. Nylon is strong, withstands abrasion, and has many other desirable properties. It has considerable elongation under load, which may not be desirable in some types of industrial products where stretching is objectionable. It is therefore necessary to study the elongation load curve to determine whether the stretching and recovery under the expected load conditions would be within acceptable range.

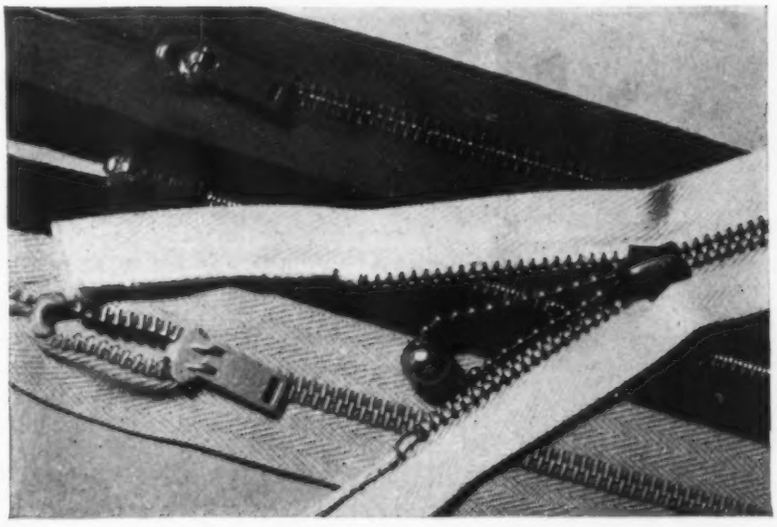
Silk is of less importance than prewar. It is strong and warm, but deteriorates under sunlight.

Aralac, a protein fibre made from casein, is used extensively in mak-

(*Please turn to page* 314)

SEYMOUR NICKEL SILVER

ON THIRTY MILLION HANDBAGS??



The exact number of zippered handbags in use is far more than one to a family; add purses, luggage, clothing, covers and industrial equipment and the number reaches astronomical dimensions — just "millions and millions" is close enough! Most zippers (or slide fasteners) are made of nonferrous alloys — and a very important percent of the total output is made of Seymour Nickel Silver. This alloy of copper, nickel and zinc is preferred for these ingenious fasteners because of its exceeding toughness and strength, controllable ductility, corrosion resistance, and fine, silvery white color.

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It's quick, it's deft, it's conveniently small, yet the Handee Tool packs a terrific wallop!

Handee is the original, single hand controlled, electrically driven tool — and it's the finest today. It can be used at the bench or carried right to the job. It reaches hard-to-get-at places on machinery, touches up perishable tools, grinds dies, chip breakers on broaches, removes burrs, etc. Runs at a cool 25,000 r.p.m. AC or DC. Weighs 12 oz.

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PRECISION ATTACHMENTS: Fit Handee only. Offhand carving, routing, shaping is exact as to depth of cut, accuracy of line. Indispensable to pattern shop. Set of 6, postpaid, $7.95.

HANDEE KIT — Strong, compact steel carrying case holds the Handee Tool and a complete assortment of accessories. Postpaid, $27.50. Handee with 7 accessories only, $20.50.

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WRITE FOR 64-PAGE CATALOG

CHICAGO WHEEL & MFG. CO. 1101 West Monroe Street, Dept. PG, Chicago 7, Illinois

Industrial Textile Fibres and Fabrics

(*Continued from page* 312)

ing felt for hats and, blended with other fibres, has found some use in wearing apparel, but the fibre is weak.

Jute is a low cost natural fibre with considerable strength and practically no stretch, but is brittle and has low flex life.

Linen, hemp and ramie are used for special purposes. When spun on the long fibre flax system, they have high strength, but when cut into short lengths for spinning on the cotton system they lose their strength value. They are very absorbent and dry quickly. Ramie has more lustre than linen or hemp.

Glass is a strong fibre and has very low elongation. It is highly resistant to the elements and most chemicals, and is used extensively in the electrical industry because of its high dielectric properties. However, it has a very low loop or knot strength and is essentially a brittle fibre which will not stand flexing. Broken glass fibres cause skin irritation.

Asbestos is used principally because of its resistance to heat and destruction by fire, but has been available heretofore primarily in coarse, uneven yarns of low tensile strength. Considerable progress has been made in blending it with other fibres, particularly cotton, and combining it with glass fibres to give it strength, which has substantially enlarged its usefulness in the industrial field.

The other fibres you occasionally hear about do not have any extensive commercial usage as yet.

Combinations of these fibres may improve certain characteristics. However, they are also a compromise, as the modification or addition of one property is usually at the expense of another, and there are so many characteristics usually required in the final product that no one fibre or combination can be fully adequate, and the combinations may not lend themselves to the subsequent additional manufacturing and processing operations.

A fundamental knowledge of fibre qualities and the manufacturing and processing possibilities is not entirely adequate for full utilization of the best available qualities for the required end use. It requires, in addition, the ability to put these possibilities into such practical and useful form that these special qualities can function properly.

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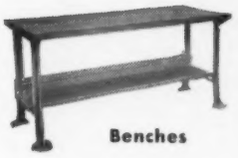
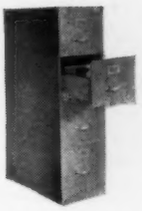

Benches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YOU FURNISH THE STEEL
LYON
WILL MAKE THE PRODUCT

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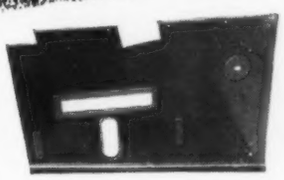
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• Here's how you can speed up plant expansion, boost production, or turn surplus steel inventory into cash.

(1) If you can supply us with 12 to 24 gauge sheet steel, we will supply you pound for pound with any selection of Lyon standard products now in production.

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• Wood Working Benches	• Hanging Cabinets	• Folding Chairs	• Work Benches	• Bar Racks	• Hopper Bins	• Desks • Sorting Files
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PROTECTION—Protects against abrasion, acids, alkalies, chemicals, corrosives, stains, salt-water, slime and irritants.

DEXTERITY—Special curvature designed to fit natural hand contours.

LONG LIFE—Vulcanized and reinforced for superior wear.

COMFORT—Lined with fleecy Canton cotton flannel. Hands stay clean, safe and dry.

TWO TYPES—Specify "Knitwrist" for hand protection; "Gauntlet" for hand and lower arm protection. Order Hood Work Gloves from your jobber—by dozen or case today. Since 1934—America's SAFETY-PLUS Glove.

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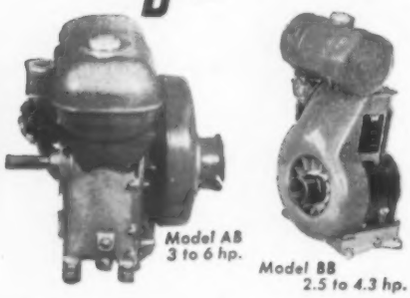

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Prompt Delivery

These 4-cycle, air-cooled gasoline engines are thoroughly service-proved in many applications. Light weight, compact design, and wide power range mean ready adaptability to many types of equipment and powering problems. Backed by 28 years of engine building experience, including manufacture of the famous Kinner aircraft engines.

Gladden Products CORP.

635 W. Colorado Blvd., Glendale 4, Calif.

We Need Not Have A Depression

(*Continued from page* 93)

bond redemptions, no drawing down of savings accounts, no wild rush to convert money into goods. In the second half of 1947 the housewife will demand better values, as she has in recent months. The arrival of new goods convinces her that better goods will be available later at lower prices.

Construction is stalled by high costs of materials and labor. New construction records will not be made in the second half of 1947. The housing demand backlog is beyond computation. But people cannot pay the prices for houses built by guild methods, hand tools, and an apprentice system more than two centuries out of date.

Inventories on hand and in transit have increased the buyer's choice of goods. Increased prices and volume tie up working capital. With high consumption they are neither excessive nor dangerous, and you must replenish them at rates not much less than current consumption demand to keep your operations uninterrupted.

In your accounting, inventories are an asset. In fact, they are a liability until they convert into receivables and cash. There is great unevenness in your inventories today and more prospect of loss than profit, even if they were bought in lower markets and are reasonably free from the inflationary costs of war. The dangers of depreciation and obsolescence in your inventories are greater than the prospect for increment for the second half of 1947.

Your purchases for the near term should reduce the peaks and lift the valleys of your inventories. Short-term purchasing that balances supply with demand should asist in giving you price reductions and permit price reduction to your customers. The higher prices of labor going into your inventory in the second half of 1947 should be offset by greater efficiencies of management to preserve or improve your price position.

These higher costs of reduced production and increased wages were forced into present prices by the President's demands after OPA was killed by an outraged people.

OPA restrictions created scarcities, fed black markets, increased prices, dislocated production and distribution lines for fifteen months between the war and its death. The nation is only six months free from

(*Please turn to page* 318)

A CENTERED EYE IN 1 OPERATION

Precision CENTERED EYE Bending With DI-ACRO BENDERS

The DI-ACRO Bender makes perfectly centered eyes from rod or strip stock at high hourly production rates. Both eyes and centering bend are formed with one operation. Any size eye may be formed within capacity of bender and ductile limits of material.

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DI-ACRO Precision Bending is accurate to .001" for duplicated parts. DI-ACRO Benders bend angle, channel, rod, tubing, wire, moulding, strip stock, etc. Machines are easily adjustable for simple, compound and reverse bends of varying radii.

DI-ACRO IS PRONOUNCED "DIE-ACK-RO"

★ Send for Catalog "DIE-LESS" DUPLICATING showing many kinds of "die-less" duplicating produced with DI-ACRO Benders, Brakes and Shears.

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Eagle polished steel oilers meet every demand for a dependable, sturdy oiler for large users—and for manufacturers who supply an oiler as equipment with their product. Built of quality cold rolled steel, highly polished and lacquered.

Bodies drawn seamless, with double seamed bottoms—reinforced. Insert type spouts. ¼, 1/3, ½ and 1 pint capacities. Straight or bent spouts.

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You will too when you see for yourself—learn for yourself — Pantasote's unmatched advantages. Extra soft and supple, Pantasote is economical in cutting and easy to tailor — works easily around corners, curves, and edges. Yes! Use Pantasote, and watch your sales curve rise and your profits go up!

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Write to-day for FREE sample swatches and complete information about both these outstanding products.

NEW PANTASOTE CONSUMER TAG printed in rich gold and black . supplied without charge to manufacturers to attach to products made of PANTASOTE

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We Need Not Have A Depression

(*Continued from page* 316)

OPA controls. Collectively, you know more about prices than all the theorists who directed OPA, CPA, or other organizations limiting production.

When the government bids up prices of worker's and farmers' products—when it bids up in the markets to buy relief for the peoples of Europe—it increases prices for the American people.

The President is now unwilling to live with the price increases his actions organized. He demands reduction of prices and refuses to reduce by a dime the Federal income taxes that are a first lien on every asset and on every job in America. If he wants price reduction, why doesn't he start at its roots? Wage increases do not reduce the cost of living. Penalizing venture capital does not make jobs.

Business sentiment is apprehensive just now. It will remain confused during all of 1947. Business is hesitant. It anticipates that the President will deny income increases to 45 million people by vetoing the tax bill, thereby keeping prices high.

On March 26 the President demanded that prices be reduced. Because the factors of high taxes, increased wages and government buying for foreign relief, put into prices by the government, could not be dissolved in pious wishes, the President's price-reduction drive exhausted itself in words.

It is futile to wait for big price cuts that cannot appear. Prices are not made in Washington. They are made in the market place.

Certain costs of your vendors are impervious to early reduction. They include labor, taxes, transportation and fuel. The opportunity for downward revisions in material costs lie in selling and administrative costs and profits.

Costs are just as resistant as customers. It can be concluded that industrial prices are unlikely to decline much in the second half of 1947. This statement does not apply to farm products and some other lines which have risen out of proportion to the general average.

The nation continues to move from a controlled to a completely competitive economy. In the second half of 1947 we will not move into a depression, but onto a plateau at an average level slightly lower than the average of recent uneven peaks and valleys caused by long-starved demand and short supply.

The nation is not in a depression. Scarcity prices have encouraged production. Production is now bringing down prices. That was the result promised by manufacturing when it asked for the removal of OPA. Only government has detarded the process. When prices stabilize at lower levels and production further expands, you will know it sooner than can be predicted.

There won't be even a serious setback in 1947 unless the President makes it by defeating the people's demands for the correction of labor abuses and for tax reductions to create jobs.

The greatest contribution that American industry can make to the postwar period is its solvency—not its bankruptcy. Except industry remain solvent, employees will be fewer or none. The burden of all will be upon those of us who remain solvent.

Give industry freedom to risk and venture; give back the incentive of competition; restore equality for industry with labor before the law and industry will create wealth that will constantly raise the standard of living in any nation as long as incentive remains. Let us who have grown up by competition recognize that it is not an easy way. But there is no easy way to win the peace any more than there was an easy way to win the war.

If countless billions of American taxpayers' money in gifts and grants and loans and losses are supplied to the nations of Western Europe, prices must rise higher in the States and our standard of living must fall.

When foreign nations accept competitive enterprise they can produce their own goods, develop their own resources, pay their own bills, meet their own debts, and abandon currency and quota controls because such defenses won't be needed. With freedom to enterprise they can raise the iron curtain, the quota curtains, the bloc curtains and other restrictions that keep their people in subjugation.

Only American competitive freedom can lift the world from poverty to plenty. Freedom in America should be expanded, not contracted, so that America can be the example for all the world—a free competitive enterprise lifting the standard of living for all the people who labor and work and have ambition.

ROPE KNOTS TO USE FOR INDUSTRIAL JOBS

a PLYMOUTH Lifesaver

Of the thousands of different knots and hitches, the 14 shown here are probably the most important for industrial workers to use. The right knot for the job means greater safety to men and property, and longer, more economical use of the rope. Be sure to fit the choice of knot to the purpose for which it will be used. Knots should be used for temporary attachments only. Use a splice for permanent connections.

the OVERHAND knot

The simplest of all knot forms and the beginning of many more difficult ones. Often used as a stopper knot on the end of a fall. In general, use it only on small cord and twine, since it jams and is hard to untie, often injuring the fiber.

the FIGURE EIGHT knot

This is much easier to untie than the Overhand Knot—is larger, stronger and does not injure rope fibers. It is the best knot to use to keep the end of a rope or "fall" from running out of a tackle or pulley.

SQUARE or REEF knot

The universal package knot for parcels and bundles. Though often used, it is a dangerous knot for tying two ropes together, since it unties easily when either free end is jerked.

BOWLINE

FOR HITCHING, LIFTING, and JOINING

Sometimes called the "king of knots", the Bowline never jams or slips if properly tied. Generally tied in the hand, it can also be used as a hitch and tied directly around the object.

BOWLINE on BIGHT

TO HITCH IN THE MIDDLE OF A LONG FALL OR AS A SLING

RUNNING BOWLINE

FOR PACKAGE TYING

Tie the regular Bowline around a loop of its own standing part. A good knot to use for tightening at the beginning of tying a package.

HALF HITCH

A BASIC KNOT FORM

The Half Hitch is generally used for fastening to an object for a right-angle pull. The first step in tying more complicated Hitches, such as the reliable Timber Hitch. But for use by itself, it is unsafe, since it quickly slips untied.

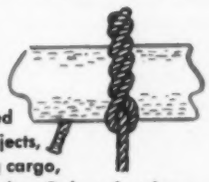
CLOVE HITCH

THE "GENERAL UTILITY" HITCH

The Clove Hitch is a quick, simple method of fastening a rope around a post. It is sometimes called the "Builder's Hitch" because of its extensive use in fastening staging to upright posts. It can be tied in the middle or end of a rope. Since it has a tendency to slip when used at the end of a rope, the end should be half-hitched to the standing part for greater security.

TIMBER HITCH

USED FOR HOISTING



This is a simple, convenient Hitch which does not jam, and comes undone readily when the pull ceases. It is used mainly to hoist cylindrical objects, such as logs, also in handling cargo, to hoist small crates and bales. Only safe when free end is jammed against the object to be lifted.

BLACKWALL HITCH

HOOK HITCH FOR A MODERATE LOAD

A practical Hitch if the end of a rope is short, but never entirely trustworthy. Satisfactory for a moderate load if the tension is never allowed to slacken.

CATSPAW

HOOK HITCH FOR HEAVY LOADS

This is the Hook Hitch generally tied in a "sling" or continuous wreath of rope—for heavy hoisting. It does not jam and unties by itself when removed from the hook.

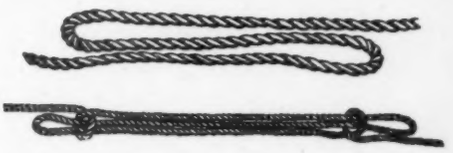
SHEET BEND (Weaver's Knot)

TO JOIN LIGHT AND MEDIUM ROPES

This is the common utility Bend used aboard ship, and unties easily without injuring rope fibers.

SHEEPSHANK

USED TO SHORTEN A ROPE



The Sheepshank is intended to shorten a rope for temporary use only. Carefully tied and drawn up tight, it is fairly reliable under a steady pull. But to make it secure for any length of time, both loops should be seized to the standing parts. An ordinary seizing is made with cord or yarn. It consists of several round turns about the parts to be fastened together—the ends finished off with a square knot.

EYE SPLICE

STRONGEST, MOST PERMANENT ROPE LOOP

An Eye Splice is used in the end of a rope for mooring and in place of the Honda Knot for making a Lariat. This is approximately double the strength of any knot and should be used for permanent connections.

ROPE SIZES and STRENGTHS

NOTE: *These specifications are for three strand rope with standard lay. To figure safe loads use at least a 5 to 1 safety factor.*

NOMINAL SIZE			NET WGT. OF 100 FEET	MINIMUM LENGTH IN ONE POUND (NET WGT.)	APPROXIMATE GROSS WGT. FULL COILS	MINIMUM BREAKING STRENGTH	
THREADS	CIRCUMFERENCE	DIAMETER				PLYMOUTH SHIP BRAND MANILA	PLYMOUTH SISAL
	Inches	Inches	Pounds	Feet	Pounds	Pounds	Pounds
6-Fine	9/16	3/16	1.47	67.9	50	450	360
6	3/4	1/4	1.96	51.0	50	600	480
9	1	5/16	2.84	35.2	50	1,000	800
12	1 1/8	3/8	4.02	24.9	50	1,350	1,080
15	1 1/4	7/16	5.15	19.4	63	1,750	1,400
18	1 3/8	15/32	6.13	16.3	75	2,250	1,800
21	1 1/2	1/2	7.35	13.6	90	2,650	2,120
	1 3/4	9/16	10.2	9.80	125	3,450	2,760
	2	5/8	13.1	7.65	160	4,400	3,520
	2 1/4	3/4	16.3	6.12	200	5,400	4,320
	2 1/2	13/16	19.1	5.23	234	6,500	5,200
	2 3/4	7/8	22.0	4.54	270	7,700	6,160
	3	1	26.5	3.78	324	9,000	7,200
	3 1/4	1 1/16	30.7	3.26	375	10,500	8,400
	3 1/2	1 1/8	35.2	2.84	432	12,000	9,600
	3 3/4	1 1/4	40.8	2.45	502	13,500	10,800
	4	1 5/16	46.9	2.13	576	15,000	12,000
	4 1/2	1 1/2	58.8	1.70	720	18,500	14,800
	5	1 5/8	73.0	1.37	893	22,500	18,000
	5 1/2	1 3/4	87.7	1.14	1,073	26,500	21,200
	6	2	105.	.949	1,290	31,000	24,800
	6 1/2	2 1/8	123.	.816	1,503	36,000	28,800
	7	2 1/4	143.	.699	1,752	41,000	32,800
	7 1/2	2 1/2	163.	.612	2,004	46,500	37,200
	8	2 5/8	187.	.534	2,290	52,000	41,600
	8 1/2	2 7/8	211.	.474	2,580	58,000	46,400
	9	3	237.	.422	2,900	64,000	51,200
	9 1/2	3 1/8	264.	.379	3,225	71,000	56,800
	10	3 1/4	292.	.342	3,590	77,000	61,600
	11	3 1/2	360.	.278	4,400	91,000	72,800
	12	4	426.	.235	5,225	105,000	84,000

Standards: Smaller sizes of ropes are usually ordered by the number of threads, the larger sizes by circumference. 6, 9, and 12-thread rope is packed in standard 25 and 50 lb. coils. All larger sizes are put up in full coils of 200 fathoms—in half coils of 100 fathoms. One fathom equals six feet.

FREE! **Plymouth will gladly mail you upon request additional copies of this valuable chart for every department of your plant or shop where rope is used. Foremen and workers will find it useful in protecting life and property—saving rope—cutting costs!**

PLYMOUTH CORDAGE COMPANY, PLYMOUTH, MASSACHUSETTS. DISTRICT OFFICES: BOSTON, NEW YORK, CHICAGO, HOUSTON, SAN FRANCISCO. WAREHOUSE STOCKS: NEW YORK, BOSTON, PHILADELPHIA, BALTIMORE, HOUSTON, CHICAGO, SAN FRANCISCO. IN CANADA: SALES OFFICE—CORDAGE DISTRIBUTORS, LTD., TORONTO. MILL—WELLAND, ONTARIO.

THE ROPE YOU CAN TRUST BECAUSE IT IS ENGINEERED FOR YOUR JOB

Legal Geography of Prices

(*Continued from page* 138)

pricing by non-base mills against base mills was held illegal. But the absorption of freight by one base mill in meeting the delivered price of another base mill was held not to violate the Patman Act.

Analogous in principle to the multiple basing point system is that system in which the seller prices his goods f.o.b. his factory but reduces his price enough to equalize the freight from a competitor's factory nearer the buyer. If meeting competition is a complete defense, the Trade Commission will presumably permit f.o.b. sellers to equalize freight in individual transactions. But it seems clear that where an f.o.b. seller equalizes freight to a distant competitor's factory, he is depriving the nearby customer of the advantage of his location.

The final question is whether freight may be equalized to some phantom point which is being illegally used by a competitor, and where the seller knows all the facts. It may some day be held that one cannot in good faith meet a competitive price which he suspects, or his lawyer tells him, is illegal. Yet if the concept of good faith means that competition cannot be met in such instances—but that business must be foregone until the Government acts or a treble damage suit is completed—then the Patman Act may impede rather than foster realistic price competition.

At the outset I suggested that as buyers you cannot knowingly accept the benefit of an unlawful price discrimination. Most of the storm signals have yet to be judicially established. While many of us can tell when the business sky is overcast, even the most skilled legal meterologist cannot be certain that it will rain.

You should be alert where you find differences in delivered prices that are competitively significant. Where such differences exist, you should ascertain whether the seller is including rail freight from his actual production or shipping point. If he is not doing so, and is not meeting a competitive price, there may be real danger. Even f.o.b. prices with freight equalized to some phantom place invite examination.

Beyond these lines the legal geography of price has not been definitely marked out. Still the subject is worth continued study. If the Trade Commission's views

(*Please turn to page* 322)

APPLIANCES THAT
OUTLASTED THE WAR
TEACH A LESSON ABOUT
dependable
HUSSEY COPPER
MANY of the appliances that seemed ready for obsolescence before the war served faithfully long past their normal period of usefulness partly because copper was always used where copper's characteristics were needed.
Farsighted designers . . . manufacturers . . . and the public are now demanding genuine material where substitutes filled-in during shortage periods. The trend is to the dependable durability of genuine HUSSEY COPPER.
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COPPER
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(Division of Copper Range Co.)
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Hussey Warehouses Carry Stocks of Copper and Brass Products for Prompt Delivery

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ARMSTRONG Lathe Dogs give extra service because they are drop forged from selected open hearth steel, and, are heat treated to extreme toughness and stiffness. Hubs are made large enough to permit re-tapping, screws are also of special analysis steel and are hardened at the point to prevent upsetting. ARMSTRONG Dogs come in 10 types with square head of safety headless screws, with straight or bent tails. They are carried in stock by your local ARMSTRONG Distributor.

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MOXSAN FINGER PROTECTORS

Moxsan protects not only the front of fingers, but *both sides* with durable leather that's seamless on all wearing surfaces. Elastic web back provides cool, comfortable fit. Tapered cut gives freedom of movement. Essential for handling rough or sharp articles, for buffing, grinding, sanding, polishing, punch press work and hundreds of other jobs. Fits all fingers. Available in 3 types of leather for men and women: heavy duty (7394), medium duty (8384), fine work (9346).
Send 10c for sample or $6.15 for a box of 72 . . . today!

FREE: *Special circular illustrating full line of finger protectors and Illustrated catalog of safety work gloves and safety apparel*

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LORD BALTIMORE HOTEL
H. Nelson Busick, Managing Director
BALTIMORE AND HANOVER STS., BALTIMORE 3, MD.

Legal Geography of Prices

(*Continued from page 321*)

are sustained, an economic revolution is in sight for many industries.

You know far better than most, the extent to which the location of factories has been governed by multiple basing point selling, and you are aware of the advantage of having more than one source of supply available at each point at the same price.

As business executives you are cognizant of the cost balance between additional volume and necessary freight absorptions to a distant market. As purchasing agents you will have to calculate varying transportation costs from different factories if delivered prices are made unlawful.

And perhaps even better than most lawyers and economists, you can evaluate the underlying issues in the relation of these questions to the survival of the American competitive system. You can answer the riddle whether required f.o.b. mill pricing will create price competition where none exists.

To you must be left the perplexing problem whether basing point selling is the culmination or the negation of true competition.

On many of these complex issues you may readily find yourself in the position of the medieval monk who, having read an abstruse metaphysical work, wrote in despair on the flyleaf, "I believe, Oh Lord, but, alas, I do not understand."

* * *

Man-Made Fibres

(*Continued from page 135*)

needed in civilian uses. An example of this is the utilization of the high abrasion resistance, quick drying, dimensional stability and non-shrinking qualities of nylon when blended with wool for the production of longer-wearing, quicker-drying, and washable socks. In Germany, during the war, nylon was judiciously blended with rayon in order to fulfill many needs which were formerly supplied entirely by cotton, and with wool to conserve the shrunken supply of that important fiber.

The horizon of styling is being broadened by these new fibres. It is readily seen that every new fibre added to our laboratory shelf of raw materials acts positively in this respect. The fibre when used alone in a fabric creates a new style, but

the permutations and combinations which may be obtained by blending an entirely new fibre with the present natural and man-made fibres are of far reaching proportions to our industry.

Rayon Production

In 1946 the United States was producing approximately 700 million pounds of rayon and acetate yarn, and approximately 177 million pounds of staple in this country. Between 1940 and 1946 the poundage of tire yarn increased approximately 205 million younds. The expansion of tire yarn up to 1944 had not affected the amount of viscose rayon available for textile uses. In 1946 and 1947, the poundage of both tire yarn and textile yarn was increased, bringing both yarns to the highest production in our history. Broad woven goods, taking 50%, and tire yarn, taking 32%, are far the largest consumers of viscose rayon.

The estimated capacity for cellulosic yarns in 1950 is placed at 1,350,000,000 pounds, as follows: Viscose & cupra yarn, 570,000,000 pounds, an increase of 16% over 1946; viscose staple, 350,000,000 pounds, an increase of 163.7%; acetate yarn, 300,000,000 pounds, an increase of 61%, and acetate staple 130,000,000, an increase of 197.6%.

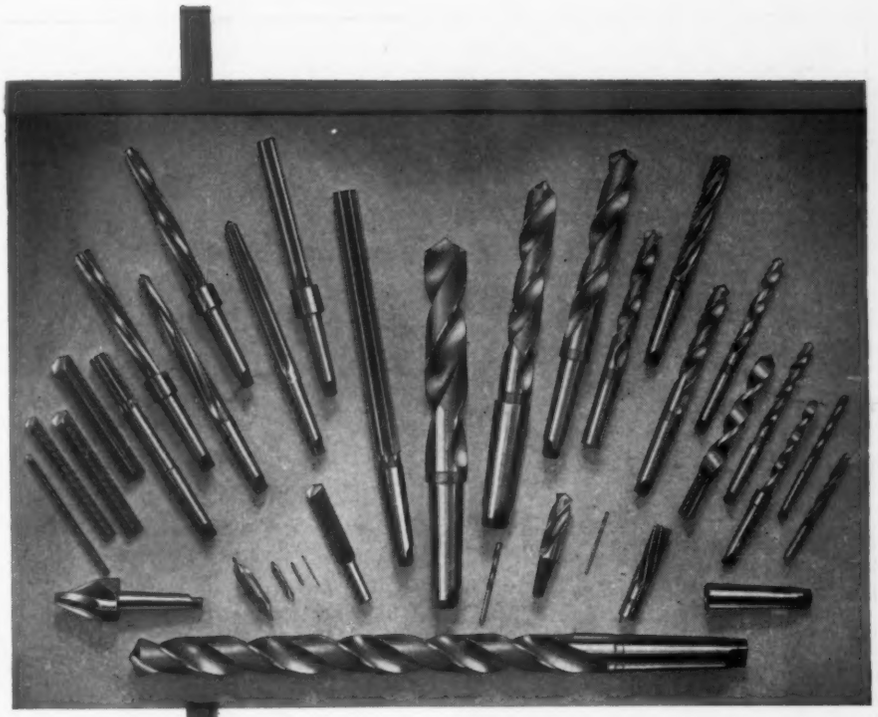
With regard to nylon, we expect to have a new unit begin operation at Martonsville, Va. this summer, and construction of new plant has been started at Chattanooga. When these plant units are completed, nylon capacity will be approximately three times that at the end of the war.

For How Much

The price of the man-made fibres is greatly dependent on the cost of raw materials and labor. Wood pulp in 1939 was $75 per ton; the present price is $147. Cotton linters in 1939 were $170 per ton; the present price is about $360. The dollar costs of labor and materials have increased 68% since 1939, while labor efficiency has decreased. It takes $2.00 today to get $1.00 worth of construction procured in 1939.

When improvement in the cost of construction does come, it will be far above prewar levels. This relationship is important because fibres, whether cellulosic or non-cellulosic, produced in new plants, will have to compete with fibres from plants costing one-half as much or even less.

(*Please turn to page* 326)



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AXLES FOR TRUCKS AND BUSES • AXLE HOUSINGS • BLIND RIVETS
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METAL SPOKE WHEELS • GEARS AND FORGINGS • RAILWAY TRUCKS

Prices on CLARK products will not be advanced in excess of increased costs.

Earle E. Gordon, Supervisor Transportation Maintenance of U. S. Tires – Division of the United States Rubber Company, explains the advantage of his Company's products to M. J. Hunter, Purchasing Agent of Continental Can Company, Inc., Central Division.

"Judging Values Is the P. A.'s Job"

Says Earle Gordon, "The Purchasing Agent today is keenly aware that a dollar misspent for inefficient equipment or materials shortens profits and can never be retrieved. He is the one man in the organization trained to judge values by *end* costs rather than by *initial* costs, and especially delegated by management to OK your product on the over-all basis for maximum ultimate efficiency. That's the P.A.'s job."

You'll find that thousands of successful producers have used this simple formula, and have helped pave their salesmen's way to the P.A. through advertising in *PURCHASING*, the Purchasing Agents' own magazine. It's the sure way to double the value of your salesmen's interview time in practically every worthwhile centralized Purchasing Department in the U. S.

For full facts, write PURCHASING, 205 East 42nd St., New York 17; 333 No. Michigan Ave., Chicago 1; Leader Building, Cleveland 14; Duncan A. Scott & Company, West Coast Representatives, Mills Building, San Francisco 4, and Western Pacific Building, Los Angeles 15.

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The soundest and most fundamental principle in selling to industry today lies in selling through the "front door" — through the office of the Purchasing Agent.

Most successful Sales Managers like Mr. Gordon know this, but just to make sure that *every one* of America's Sales Executives know it — and that nobody forgets it — the publishers of your magazine "Purchasing" run advertisements like the one opposite, in the key marketing magazines of the country.

These advertisements cover more than 40,000 men responsible for the sales and advertising of Industry's leading manufacturers.

IT CAN HAPPEN
in YOUR plant

IF YOU DON'T SPRINKLE
QUIK-SIL
TRADE MARK
The Modern
OIL AND GREASE
ABSORBENT
ON OILY, GREASY FLOORS

Now . . . with production volume vitally important you can't afford to gamble with lost manpower hours from floor slipping accidents. QUIK-SIL dries oil and grease with amazing speed. Gives safe footing for workers and makes floors safer for power trucking. Increases leather belting life. Won't harm shoe soles and heels, clothing, hands, floor surfaces. Makes floors easier to clean.

Approved by Underwriters Laboratories Inc., which is sponsored by National Board of Fire Underwriters.

Make Your Own Test with
FREE SAMPLE
Just sprinkle QUIK-SIL on an oily spot and note its quick-drying action. Then test the surface for surer footing. Write now!
TROJAN PRODUCTS DEPARTMENT
The Diversey Corporation
53 W. Jackson Blvd., Dept. P-7, Chicago 4, Ill.

Man-Made Fibres

(*Continued from page 323*)

These conditions may cause delay in price reductions and also in commercialization of new fibres which are now in the devlopment stage.

I should like to point out that the man-made fibres have an excellent record from the standpoint of stability of price. There has been a downward trend in price of these yarns as technological improvements have been made by research and as the volume of production increased. The downward trend and stability of price have followed a historical pattern since 1920 to the present. We know of no reason why this pattern will not continue to be maintained by our present fibres and also be followed by the new man-made fibres which are now here or may enter the picture at a later date.

* * *

The Containers Situation

(*Continued from page 134*)

to believe the goods actually will be needed by their trade.

Any excessive prices will be corrected, but only consistent with today's increased costs. While no one likes the high prices at which cotton goods are selling, we must face the fact that they reflect not only present high prices for raw cotton, but also the highest cotton textile labor costs in history.

Burlap Bags: Burlap is made from the fiber of the jute plant, and 90% of the world's supply is produced in the Province of Bengal, India. Normally burlap supplies depend upon manufacturing capacity and supply of raw jute. Now we have two important additional factors, famine and politics.

Jute mill owners provided food supplies for their workers, and largely because of this, labor conditions in the jute mills are probably better than elsewhere in India. Likelihood of further widespread disorders, even possibility of complete breakdown in Indian Administration, cannot be overlooked.

Acreage authorized by Indian Government for next crop is one-third more than for current season, and might yield around 10 million bales. This would meet reasonable world demand.

With normal jute supplies and less violence in politics, increased production is expected. It is now about 140 million yards per month which compares favorably with pre-war production.

The Indian trade has urged the Indian Government to abolish all quotas, but has been refused. Protests resulted in the recent 60% increase in the April-June quota. This increase will permit shipment of only about half the huge unshipped backlog. The world is clamoring for jute goods yet the export quota system has held unshipped in India two to three months' production, or between 300 and 400 millions of yards. This is responsible for the present second quarter famine in burlap bag supply.

There is ample bag manufacturing capacity in this country and also ample transportation facilities for bringing in the available goods from India. Hence with careful distribution, supply of goods now in stock and afloat in U. S. ports, should be sufficient for all reasonable United States bag requirements for the third quarter.

Fourth quarter supplies in the United States depend largely upon the quota that may be fixed for shipment from India to this country during July-September. Some think that all quotas may be cancelled in June. However, reliable sources think there is little chance of cancelling export quotas prior to fourth quarter. If a third quarter quota is fixed, and at anything less than the presently increased quota, there may be a severe squeeze in supplies by November or December. Then we will again face famine, as at present.

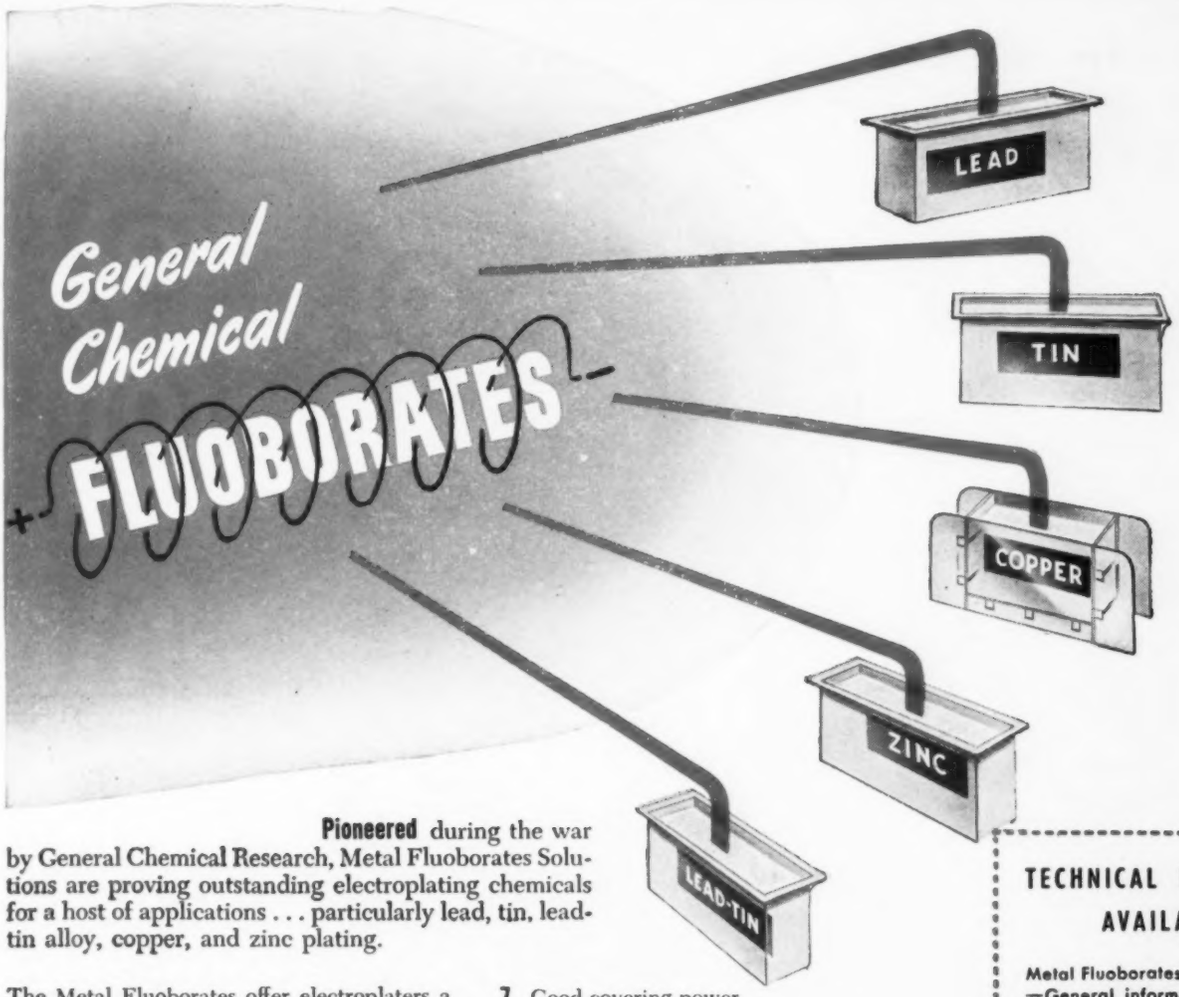
That is on the overloaded knees of the gods of Indian politics.

The can industry is now operating on a close basis, according to William G. Stolk, vice president, American Can Company, New York. With few exceptions, the industry will be able to take care of all of its customers' requirements for 1947. However, new customers must wait. The 1948 outlook is for increased production.

No immediate price decline is expected. Mr. Stolk said that the price increases initiated in January of this year reflect only the difference in labor costs since 1941, and the increased price of tin plate.

There are ample supplies of glass containers to take care of practically all of today's requirements, except two or three items, declared E. A. Schrag, Knox Glass Associates, Inc., Knox, Pa. Delivered prices average 15% higher than 1939. Mr. Schrag stated there is no likelihood of price increase unless the economy suffers another round of wage boosts.

NEW DEVELOPMENTS FOR MODERN ELECTROPLATING!



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The Metal Fluoborates offer electroplaters a combination of features long desired but hitherto unobtainable in other plating agents:

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8. Fine grained deposits of good color.
9. High speed operation.

Learn more about these new developments for modern electroplating without delay! Experimental samples available from General Chemical Company, Fluorine Division, 40 Rector Street, New York 6, N. Y. or the nearest Sales and Technical Service Office listed below. As always, General Chemical's skilled technical servicemen are ready to give you complete details and every help in preparing for trial or full-scale runs.

TECHNICAL BULLETINS AVAILABLE

Metal Fluoborates Bulletin 1015-A—General information on Metal Fluoborates, plus specific operating data on plating with Lead, Tin, and Cadmium Fluoborate.

Technical Information Manual ZF-1—The New Approach to Zinc Plating.

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BERNARD Parallel Action PLIERS (#402 —6"). Jaws close parallel like a vise. Cutters on *outside* of head for easy, quick use. Compound leverage action *for greater power.*

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For complete information on BERNARD line of pliers, nippers, cutters, punches send for catalogue. Please use coupon.

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Purchasing Must Find The Answers

(*Continued from page* 91)

units if the Purchasing Department can only procure raw materials for 750,000? What's the use of Management planning a production schedule at a certain rate if there's going to be an interruption in the delivery of the necessary raw materials? And how can Management price what it sells if it doesn't know how much its raw materials and supplies are going to cost?

Realizing this, Management of today expects and insists that the Purchasing Officer be there with the right answers whenever company policies which may be affected by costs and availability of materials, supplies, and equipment are being formulated. Don't forget that in the uncertain state in which business finds itself, more company policy than ever depends upon the answers that we P.A's give.

And so we are faced with three big jobs:

(1) to insure our Managements all the materials, supplies and equipment they require;

(2) to insure delivery when they require it; and

(3) to buy at lowest possible prices, and to buy more efficiently than ever before.

How and when do we start? First, I think we must change our thinking about the way we tackle the job.

Many of us are working much too hard! We're working too hard at routine chores which don't pay off. We're wasting our brain power which should be helping to earn dividends. Turn routine over to your staff and give your own brains a chance. Take the time to look at your problems from some new and different angles. Put the gray matter superchargers to work.

Put yourself on the other side of the fence—try being a seller instead of a buyer. Instead of thinking of ways to beat your suppliers down, start building them up. Inspire them to work with you and for you towards lower costs and better and more dependable deliveries. Encourage them to use their own best thoughts on your own worst problems and you will both benefit.

Get out and take a look at what's going on in other industries and in other units of your own. Direct your thinking to the problems besetting the co-ordinator of Production, Engineering, and Sales in your own organization. Reach beyond the confines of your own particular activity, and if you have any ideas of your own or come upon any through your contacts with suppliers or others which give promise of helping to solve problems with which other departments of your company are struggling, pass them on. In so doing you will broaden your own outlook and opportunities.

Find The Answer

Above all, learn not to take "NO" for an answer—whether it relates to delivery, quantity, or price. Say to yourself, "There must be a way," and then go out and search until you find that way. If you have a tough problem, you'll find it easy to talk to 10 men who will agree that it just can't be licked. In fact, 9 of these men may give you more reasons why it can't be solved than you knew when you started. But the 11th man will probably think of something that might make it possible. That man is the one you want to find because there is where you'll start solving your problem.

You're not going to find all the answers overnight. But find them you will if you throw your thinking and planning into high gear.

It is the duty and responsibility of purchasing Agents to work to bring assurance of price, assurance of quality, and assurance of delivery back to industry. Without these fundamentals, industry is blindfolded and hog-tied, and the economic leapfrog of wages and prices will continue. If they do so continue, business is faced with the inevitable and destructive cycle—high prices, high production; reduced consumption, rising stocks and inventories; liquidation and drastic price cuts; industry shutdown, losses, and unemployment.

The Answers

When industry can tell its Purchasing Agents, "This is how much we want—this is when we want it—this is how much we are prepared to pay for it"—and we P.A's can give definite assurance of our ability to deliver the goods on the basis outlined, then Management will know where it stands. When that day dawns, a normal economy of private enterprise operating under the age-old laws of supply and demand and healthy competition will have returned and we can have an extended period of high and profitable production. Only then shall we truly be "through the mud and blood and in the green fields beyond."

Metallurgical Integrity Protects your piping when you install Ladish Seamless Welding Fittings

Rigid metallurgical controls . . . made effective by one of industry's most modern and completely equipped laboratories . . . assure users of Ladish Seamless Welding Fittings a full measure of dependability. Exhaustive physical and chemical tests insure metal properties that best provide long, trouble-free service. This Ladish metallurgical integrity . . . evidenced by the heat code identification on each Ladish fitting . . . gives added protection to your piping installations.

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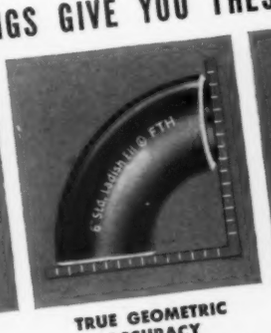
FULL EFFECTIVE RADIUS

Reduces friction and pressure loss to a minimum and decreases turbulence.

SCIENTIFIC METAL DISTRIBUTION

Permits designs of maximum mechanical strength to resist piping strains.



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Facilitates piping makeup, assures accurate alignment and flow efficiency.

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Minimize resistance to flow. Absence of irregularities retards erosion.

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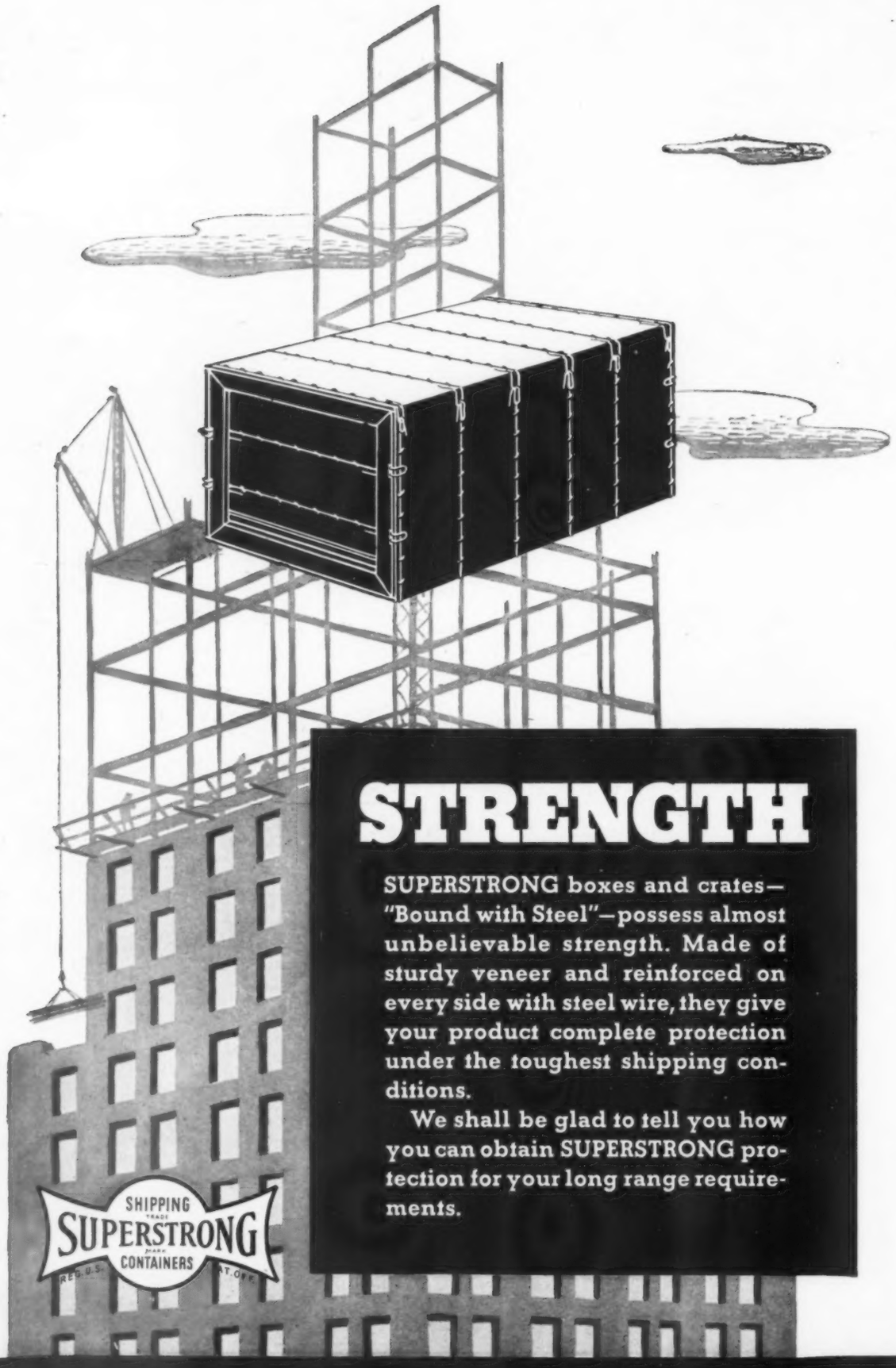

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We shall be glad to tell you how you can obtain SUPERSTRONG protection for your long range requirements.

RATHBORNE, HAIR AND RIDGWAY COMPANY

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Price Levels Must Decline

(*Continued from page* 94)

prive level. Then we can turn to 1926, the commonly used base, and this also appears too low under existing conditions. What is needed is an over-all drop of between 15% and 20% that would take the edge off inflation and bring prices within striking distance of the consumer. It is well to keep in mind that there never has been a perfect sustained price relationship between groups of commodities, and there never will be. Maladjustments are in evidence every year whether it be 1939 or 1929.

A check-up clearly shows that there are groups still altogether too high to be economically healthy, and prices must come down before the foundation is solidified which will support a long sustained period of industrial activity. In the category of commodities too high we could single out for special attention livestock and specific agricultural products. Building material prices are like a pyramid on its apex. Hide and leather prices appear too high, and this is likewise true of paint materials. Price adjustments downward in soft goods —cotton, wool, and rayon—appear in order. Coarse textiles are also in the inflated group; whereas vegetable oils have experienced a broad decline in recent weeks, there is still a considerable distance to go before true price stabilization sets in. Later on paper and pulp prices will also be subject to an adjustment downward, and we can visualize price adjustments to lower ground on the part of nonferrous metals by the turn of 1948. A price adjustment to prewar patterns or ratios can be realized either by those groups that are too high, declining, or those groups that are relatively low, advancing. We are convinced that the greatest activity and the real initiative from a price standpoint will be noted in the top-heavy groups.

LIGHTING EXPOSITION AND CONFERENCE AT CHICAGO

The second International Lighting Exposition and Conference is scheduled to be held in Chicago, November 3 to 7, at the Stevens Hotel. Theme of the exposition is "Plan Tomorrow's Lighting Today," stressing planned lighting for industry, business, public buildings, institutions, retail establishments, and so on. More than 80 manufacturers will exhibit the newest lighting developments at the exposition.

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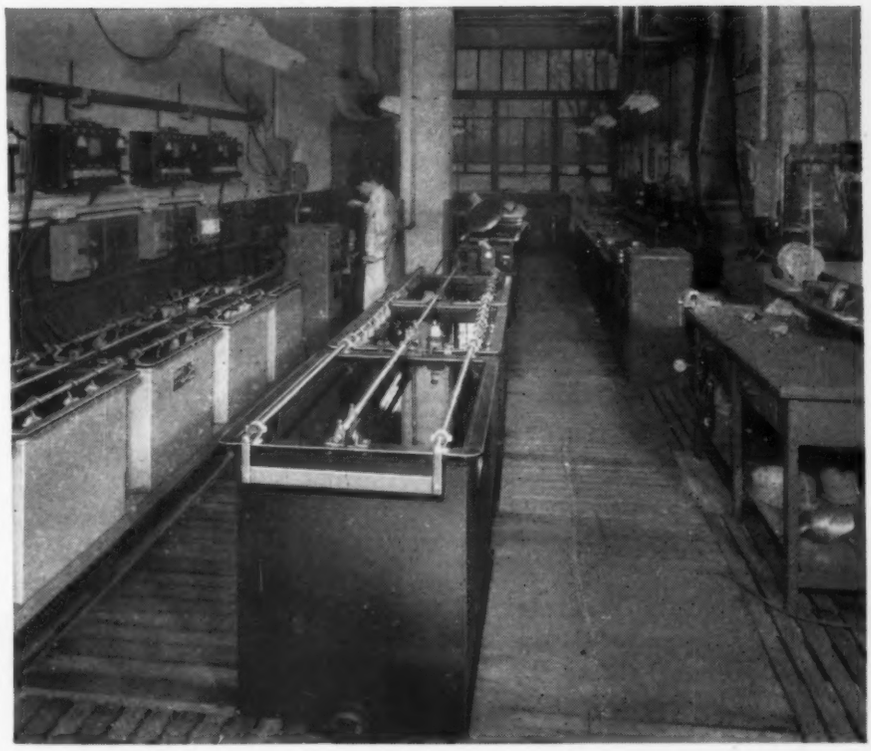

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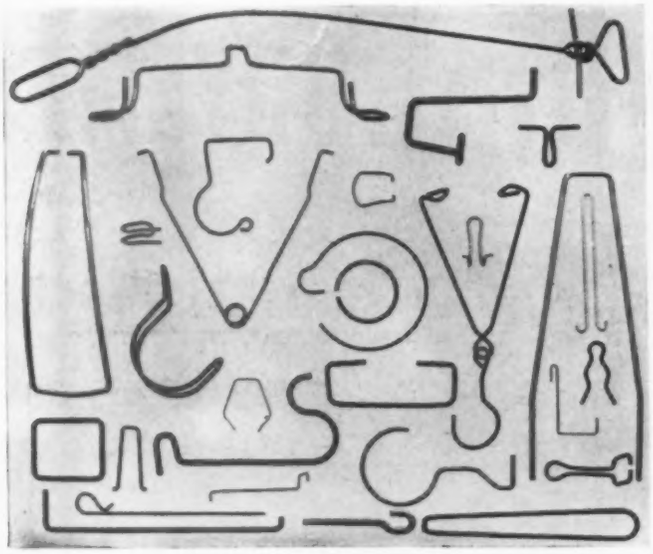

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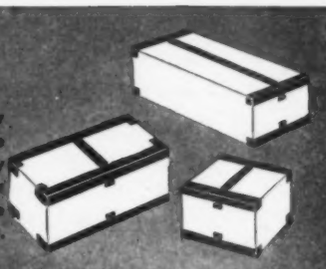

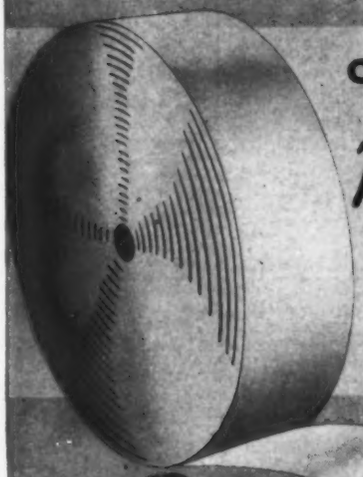

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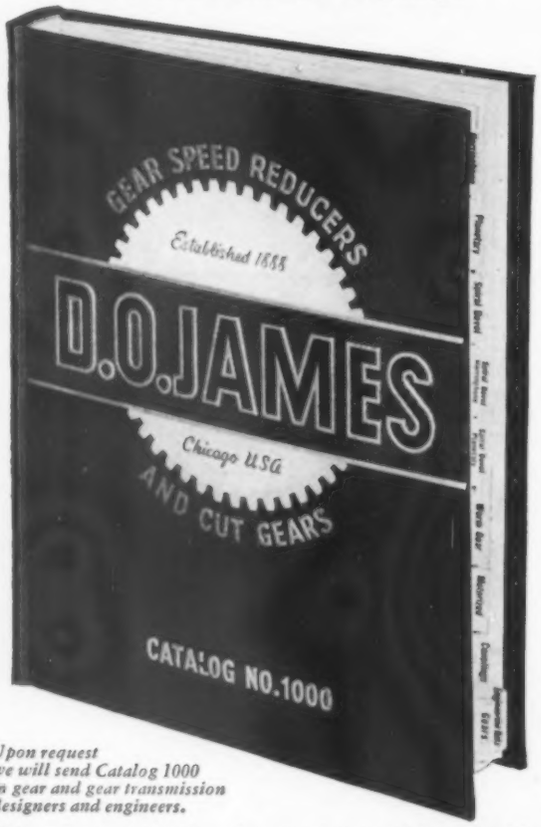

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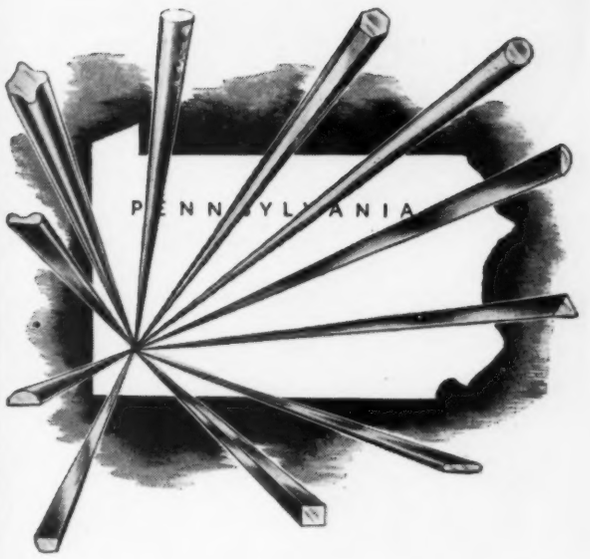

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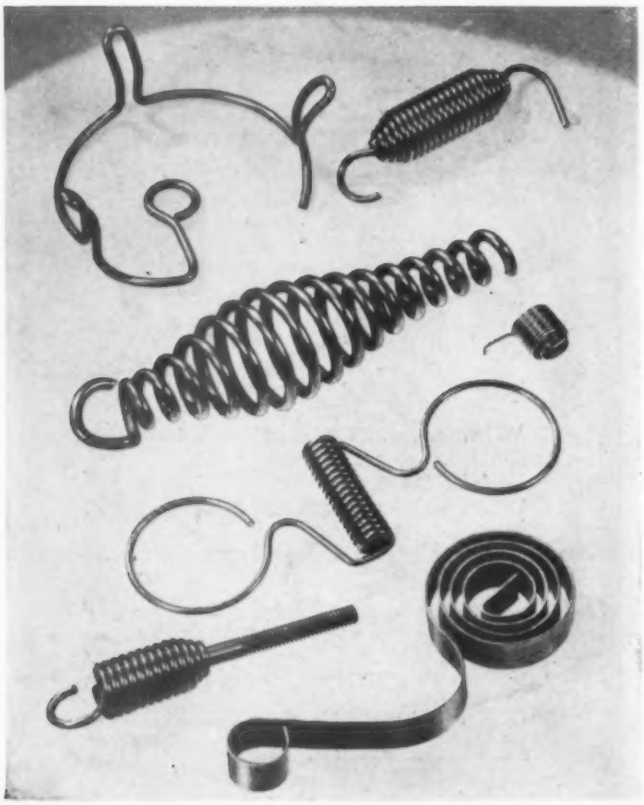

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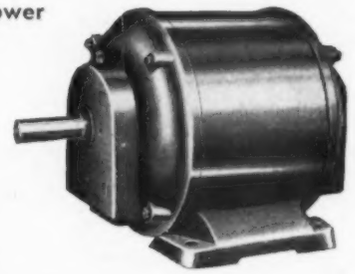

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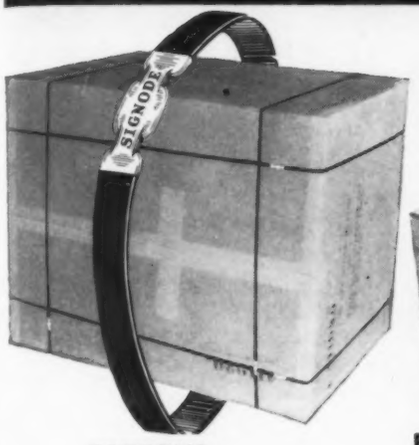
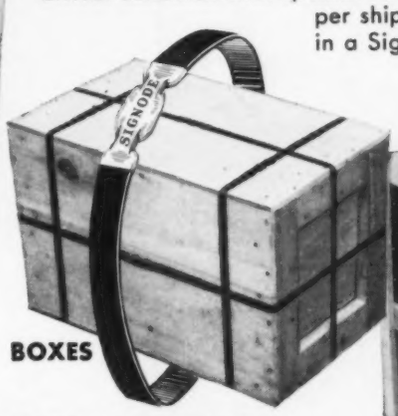
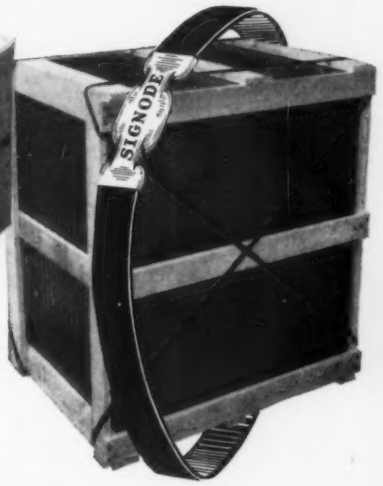


CARTONS



BOXES



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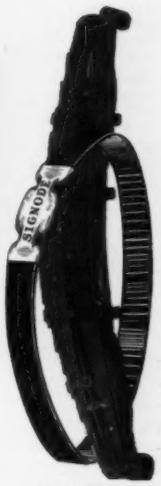

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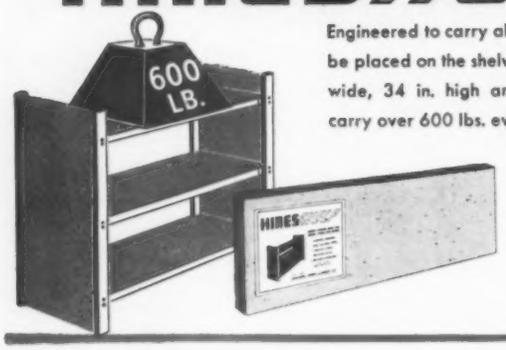
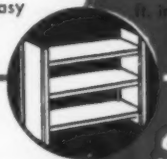
The shelves at the right were made with 2 Regular Units and 2 Extension Units—overall measurement of 68 in. high, 6 ft. wide and 11½ in. deep —36 sq. ft. of shelves at approximately 60c a sq. ft. in most markets.



Engineered to carry almost any load which can be placed on the shelves. One basic unit—3 ft. wide, 34 in. high and 11½ in. deep—will carry over 600 lbs. evenly distributed over the three shelves—9 sq. ft. of shelf areal Item comes knocked down and completely carton packed for easy handling.



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LETTERS . . .

ORCHIDS FOR FORKER

I especially liked the article in the May issue, "Visit Your Supplier's Plant." Men who take the trouble to know their suppliers will always do a better job of purchasing.

H. L. Johnson
C. A. Sprague Devices
Michigan City, Ind.

PURCHASING is an interesting magazine from cover to cover. However, I believe we could gain more benefit from it if more articles such as "Visit Your Supplier's Plant" were published. In my opinion Mr. Lee Forker has submitted the best "down to earth" article I have read in PURCHASING for some time.

Irving Young, Purchasing Agent
Strong-Scott Mfg Co.
Minneapolis, Minn.

MANY MEN, MANY MINDS

I think that PURCHASING just about covers the field for purchasing agents. The only gripe I have, is that you go through a lot of advertisements of little interest to you, to find the first reading matter. I would like to find all the reading matter at the front part of the magazine, and advertising later, because due to lack of time, I sometimes miss articles buried in between advertisements.

James Lott, Purchasing Agent
The Athenia Steel Co.
Clifton, N. J

Much of the editorial content is of little interest. However all advertisements are read.

W. H. Kuehnl, Purchasing Agent
Stainless Steel Prods. Co.
St. Paul, Minn.

The ads are of major interest.

H. H. Wise, Purchasing Agent
Scovill Mfg. Co.
Chicago, Ill.

ONE ROSE, TWO THORNS

You have a splendid magazine. The subjects covered are all pertinent, and enable the busy purchasing agents to keep abreast of the times without wading through too much "deadwood." However, some of the articles are rather lengthy.

I have a criticism to make of the delay by many manufacturers in answering inquiries. In the rapidly approaching period of competitive purchasing we need quick action.

R. C. Morrison, Purchasing Agent
The Auto-Soler Co.
Atlanta, Ga.

We try to say our say in as few words as possible. We may not always succeed, but we will keep on striving for brevity. Will the guilty ones among PURCHASING advertisers kindly heed Mr. Morrison's complaint, bearing in mind that the sun is setting on the sellers' market?—Ed.

AUTOMOTIVE EQUIPMENT SPECIFICATIONS

You may have seen the recent articles in the press regarding the Port Authority's buying program of some $744,000.00 worth of automotive and operational equipment needed for LaGuardia, Idlewild and Floyd Bennett Airports.

Of this amount, $600,000.00 will be for automotive equipment of a special character, such as: Crash Trucks; Compressors; Fire Fighting Equipment; Dump, Ladder and Crane Trucks; Tank Trucks; Sanitation Units; Snow Loaders and Plows; Mowers; Police Equipment; Road, Construction & Maintenance Equipment, etc.

It would be most helpful, if you would assist us by letting us have any data on specifications.

James Clark McGuire, Director
Department of Purchases
The Port of New York Authority
New York, N. Y.

The best source of information on specifications for the equipment listed is the National Directory of Commodity Specifications (identified as National Bureau of Standards Miscellaneous Publication M178). This is reasonably up to date — 1945 — and lists the available specifications recognized as having reputable national standing, whether developed by industrial or governmental agencies. It can be procured from the U. S. Government Printing Office, Washington, D. C., at $4 a copy.—Ed.

CHEERS FOR "NEW PRODUCTS"

Your "New Products . . . Ideas" and "Free Informative Literature" sections are in my opinion your greatest features.

Max S. Schwarz, Purchasing Agent
Adam Hat Stores, Inc.
New York, N. Y.

A fine magazine, well set up. "New Products-Ideas" most interesting to me.

J. H. Rathke, Purchasing Agent
Wyckoff Steel Co.
Chicago, Ill.

HOW MACHINE TOOLS ARE BOUGHT

I would appreciate any specific information on the subject of "Purchasing of Machine Equipment for a Light Manufacturing Company."

This information will be used to prepare a written project for our class in Industrial Purchasing and Material Control.

Vincent J. McLaughlin
Indiana University
Bloomington, Ind.

See September 1945 issue of PURCHASING, "How Worthington Buys Machine Tools," also page 132, May 1947 issue, "The Purchasing Agent's Part in Buying Machine Tools."—Ed.

OBJECTION

I quote from "Recent Anti-Trust Law Decisions," by Leo T. Parker, page 141 of your April issue:

> "On the other hand, see Marquette Cement Mfg. Company v. Federal Trade Commission, 147 Fed. (2d) 589, reported May, 1945. Here a cement company filed suit and asked the higher court to review an order of the Federal Trade Commission to cease and desist from engaging in unfair competition by enentering into a combination among Portland cement producers to employ a pricing system. In other words, the Commission charged that seventy-five producers of Portland cement were engaging in unfair competition by entering into a combination among themselves to employ what is known as "a multiple basing point system of pricing". The substance of the charge was that by the employment of this system such cement producers violated the anti-trust laws, particularly the Sherman Anti-Trust Act.
>
> The higher court refused to reverse the order of the Federal Trade Commission."

A reader, unfamiliar with the subject matter, would no doubt conclude that the Federal Courts have sustained the position of the Federal Trade Commission with respect to the alleged illegality of the multiple basing point method of pricing. This, however, is not the case. In Aetna Portland Cement Company vs. Federal Trade Commission, 157 F. (2d) 533, decided September 20, 1946, the United States Circuit Court of Appeals for the Seventh Circuit upheld the position of the cement industry and declared that the multiple basing point method of pricing was not illegal.

The Circuit Court's decision in September 1946 was a complete victory for the cement industry. Therefore, I think it is important that the readers of the article should understand the current status of this litigation. A petition for certiorari, filed in the United States Supreme Court, was granted on March 10, 1947. The case is now pending in the Supreme Court.

I might say that I have often read Mr. Parker's law notes, and have found them heretofore to be accurate and informative. I feel certain, therefore, that you will be glad to have my comments with respect to the basing point case.

Charles B. Baker, General Attorney,
Universal Atlas Cement Co.,
New York 17, N. Y.

Mr. Baker's correction is appreciated. It will be referred to in a coming chapter of Mr. Parker's series on purchase law.—Ed.

AS THE PURCHASING AGENT SEES SALESMEN

Will you please be good enough to send me ten copies of the article "If I Were a Salesman"?

A. H. Kohnen, District Manager
The U. S. Electrical Tool Co.
Cincinnati, Ohio

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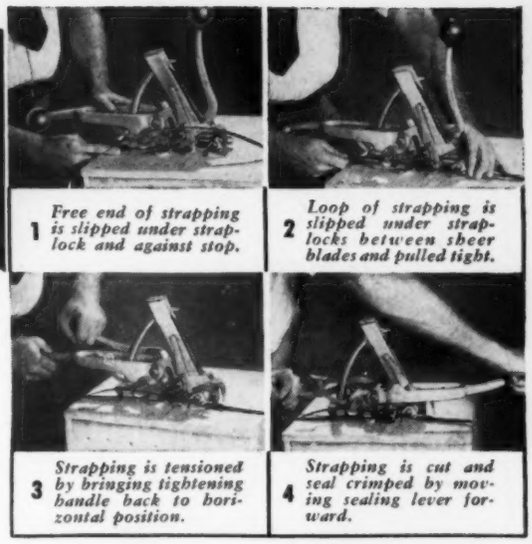

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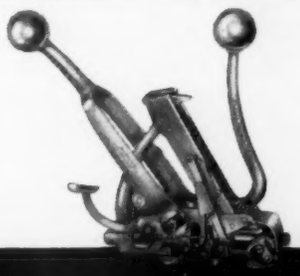

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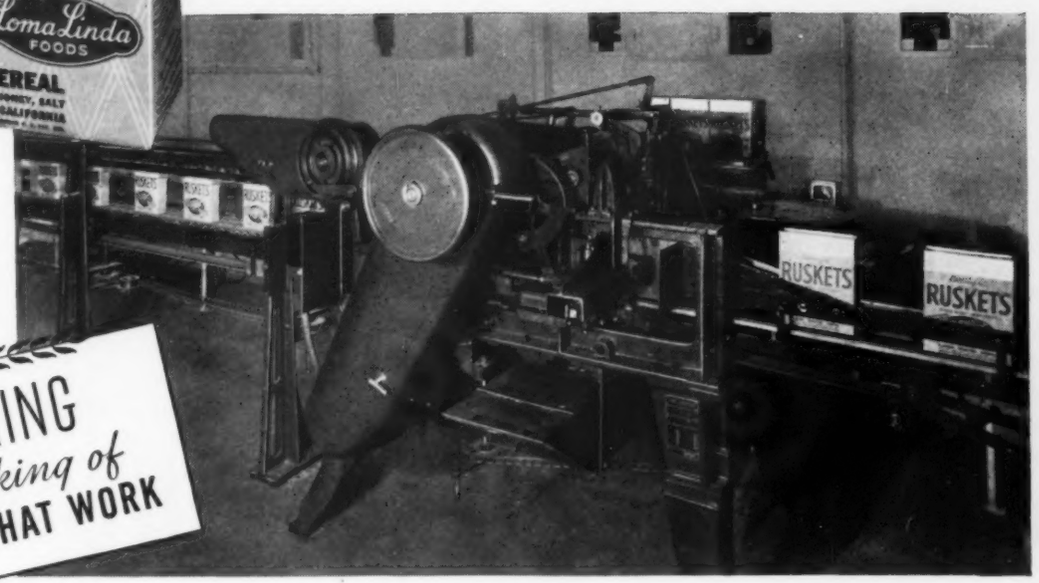

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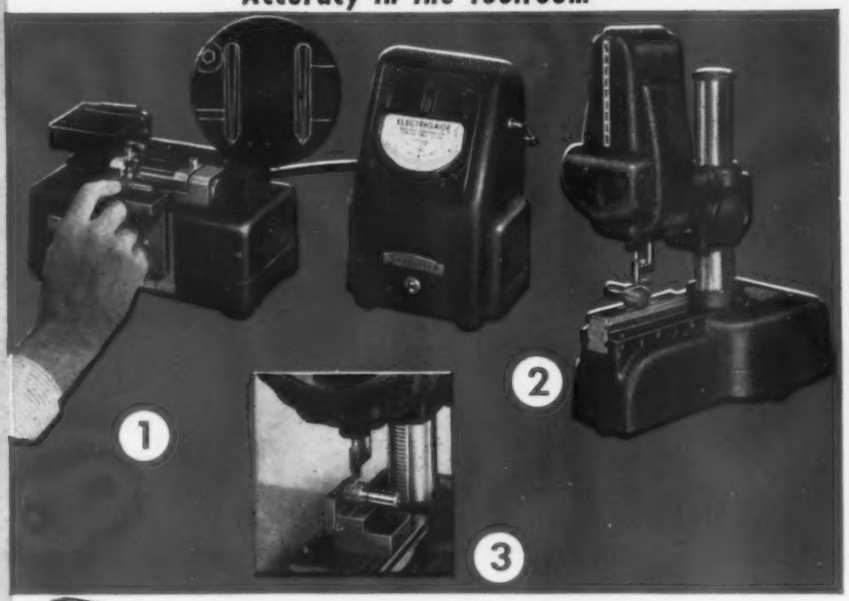

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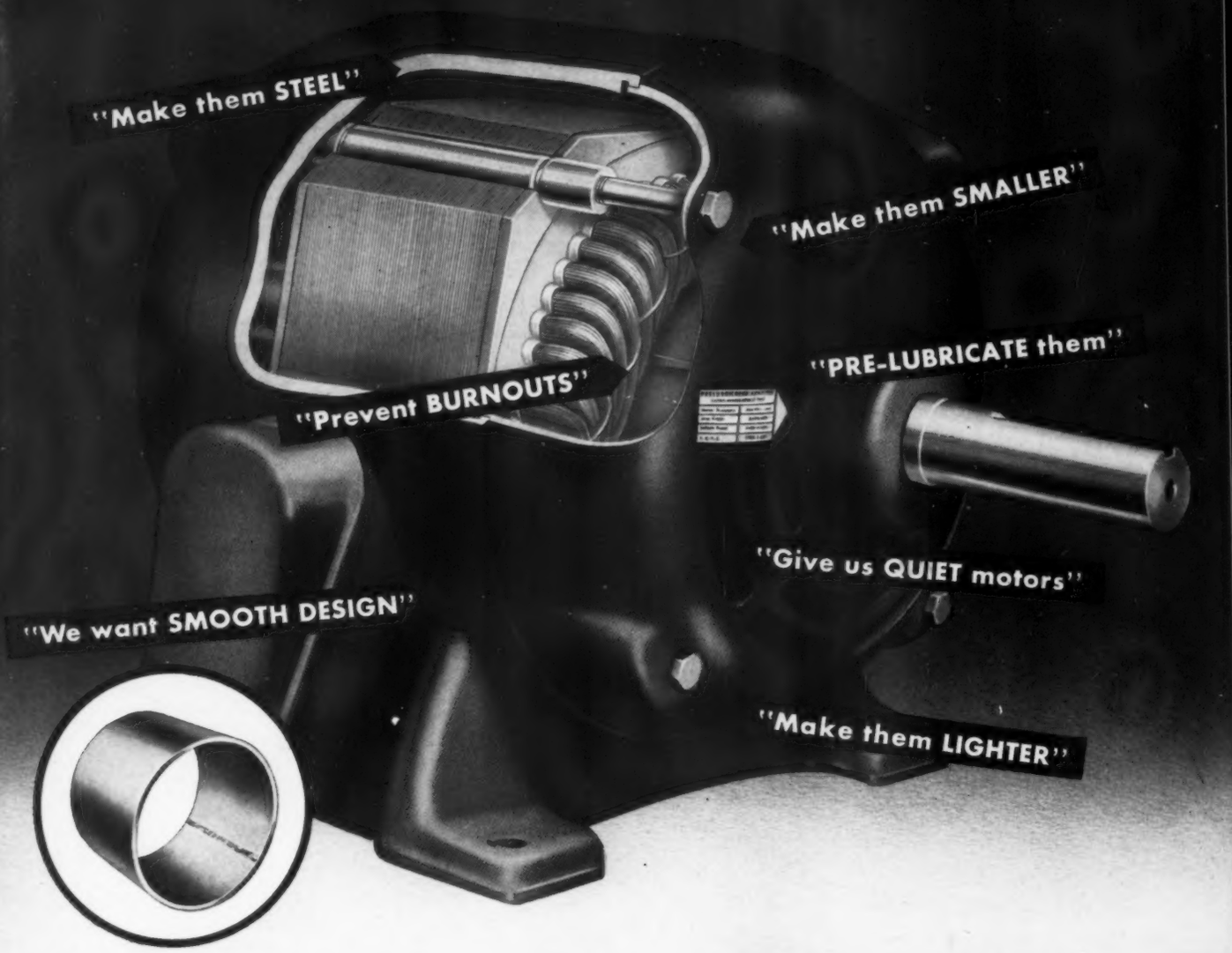

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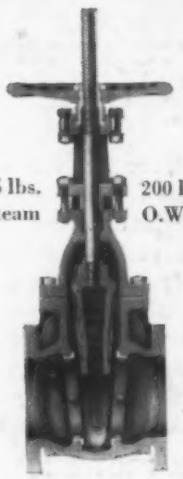

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